228

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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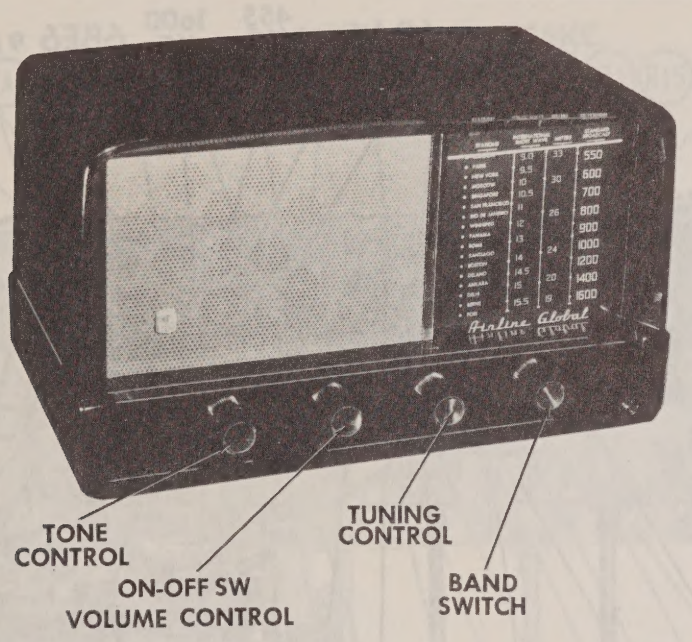
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

AIRLINE
MODEL 35WG-1573B




| | |
|---|---|
| TRADE NAME | Airline Model 35WG-1573B |
| SUPPLIER | Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill. |
| TYPE SET | AC Operated 2-Band AM Superheterodyne Receiver |
| TUBES (Six) | Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6V6GT Audio Output, 6X5GT Rectifier |
| POWER SUPPLY | 105-125 Volts AC-50/60 Cycles — RATING .28 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 540-1600KC — SHORT WAVE 9 - 15.6MC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set tone control for maximum treble.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 455KC (400%Mod) | "B" range | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | " | " | 1620KC | " | " | " | A5 | " |
| 3. | " | High side to pin 1 (grid) of 6BA6 (V1). Low side to chassis. | 1400KC | " | Tune to 1400KC signal | " | A6 | " |
| 4. | " | " | 600KC | " | Tune to 600KC signal | " | A7 | " |
| 5. | 50MMF | High side to external antenna connection. | 1400KC | " | Tune to 1400KC signal | " | A8 | Adjust for maximum output. Set pointer to 1400KC on dial. |
| 6. | .1MFD | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 15.7MC | "D" range | Tuning gang fully open | " | A9 | Adjust for maximum output. |
| 7. | " | " | 9MC | " | Tuning gang fully closed | " | A10 | Adjust for maximum output. Repeat steps 6 and 7 until receiver covers range. |
| 8 | " | High side to pin 1 (grid) of 6BA6 (V1). Low side to chassis. | 14.5MC | " | Tune to 14.5MC signal | " | A11 | Adjust for maximum output while rocking tuning gang. |
| 9. | " | " | 10MC | " | Tune to 10MC signal | " | A12 | " |
| 10. | 390Ω carbon Resistor | High side thru 390Ω to external antenna terminal | 14.5MC | " | Tune to 14.5MC signal | " | A13 | " |
| 11. | " | " | 10MC | " | Tune to 10MC signal | " | A14 | " |

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# PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 35WG-1573B

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | AIRLINE PART No. | STANDARD REPLACEMENT | | |
| V1 | RF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V2 | Converter | 6BE6 | 6BE6 | 7CH | |
| V3 | IF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V4 | Det-AVC-AF Amp. | 6AV6 | 6AV6 | 7BT | |
| V5 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V6 | Rectifier | 6X5GT | 6X5GT | 6S | |

## CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | AIRLINE PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | 60 | 250 | 45X400 | | | | | | R1388 | |
| B | 40 | 200 | | | | | | | | |
| C | 20 | 25 | | | | | | | | |
| C2 | .05 | 200 | B66503 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | Note 1 |
| C3 | 5000 | | | BPD-005 | MD-502 | TM5D5 | 811-005 | DC-525 | 5HK-D5 | |
| C4 | 10000 | | 47X595 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-501 | 5HK-S1 | |
| C5 | 500 | | 47X508 | SI500 | D6-501 | TM5T5 | GP2K-501 | UC-535 | 5GA-T5 | |
| C6 | 47 | | 47X565 | 1469-00005 | D6-470 | 5W5Q5 | GP1K-470 | UC-5447 | 5GA-Q47 | |
| C7 | 7 | | 47X610 | | | | | | | |
| C8 | .0033 | 200 | 47X427 | P688-0033 | D6-332 | PTE6D33 | GP2-333-332 | PT6233 | MB-D33 | |
| C9 | .01 | 200 | B66103 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C10 | 10000 | | 47X595 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-501 | 5HK-S1 | |
| C11A | 50 | | 47X112 | BPD-00005 | D6-500 | TM5Q5 | GP1K-500 | UC-545 | 5GA-Q5 | |
| B | 50 | | | BPD-00005 | D6-500 | TM5Q5 | GP1K-500 | UC-545 | 5GA-Q5 | |
| C12 | .05 | 200 | B66503 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C13 | 68 | | 47X471 | 1469-00007 | D6-680 | 5W5Q7 | GP1K-680 | UC-5468 | 5GA-Q68 | |
| C14 | .005 | 600 | H66502 | P688-005 | D6-502 | PTE6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C15A | .02 | | | | | | | | | |
| B | 250 | | ♦76X5 | | | | | | | |
| C | | | | | | | | | | |
| C16 | .01 | 200 | B66103 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C17 | .02 | 200 | B66203 | P488-02 | D6-222 | PJ2S2 | | PT412 | 4TM-S2 | |
| C18 | .005 | 800 | D66502 | P1088-005 | DD16-502 | PTE16D5 | | PT1625 | MB-D5 | |

Note 1. Some Models use 500MMF in this application.
♦ Items C15A, C15B, C15C, R18A, R18B are combined in one unit.
When replacing items separately, C15B and C15C should total 250MMF.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | AIRLINE PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 500KΩ | ½ | 36X385 | Q13-133X | AT-78 | ABT-66 | UT-427 | Volume-tapped @ 100KΩ |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | AK-4 | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SW-A | KB-1 | US-26 | Attach to R1A |
| R2A | 1Meg | ½ | 40X343 | Q11-137 | AG-61-S | AB-69 | U-54 | Tone |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | AK-4 | Not Req. | Attach to R2A |

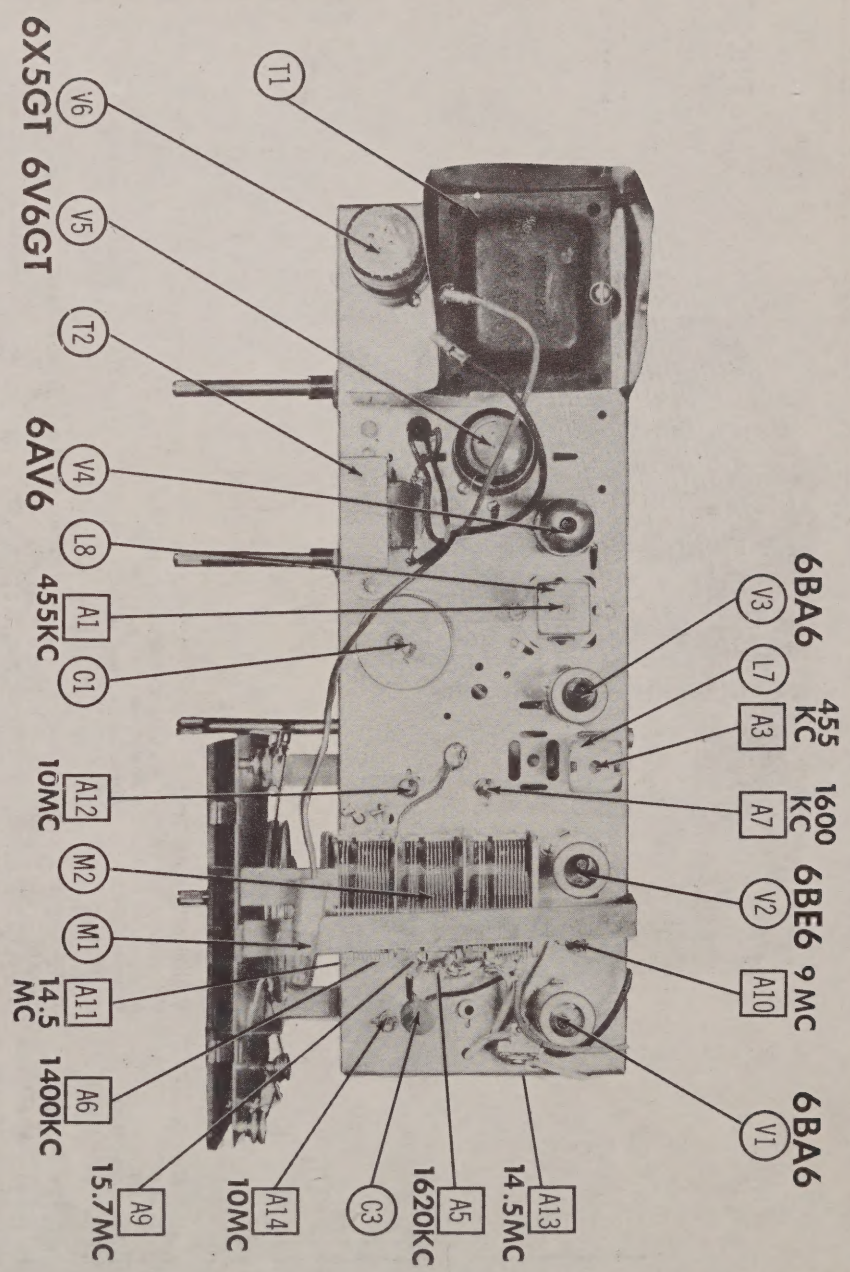
## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | AIRLINE PART No. | IRC PART No. | |
| R3 | 2.2Meg | ½ | B85225 | BTS-2.2Meg | |
| R4 | 150Ω | ½ | B85151 | BTS-150 | |
| R5 | 1000Ω | ½ | B84102 | BTS-1000 | Note 2. |
| R6 | 68KΩ | ½ | B84683 | BTS-68K | |
| R7 | 20KΩ | ½ | B84203 | | |
| R8 | 10Ω | ½ | B85100 | | |
| R9 | 22KΩ | ½ | B85223 | BTS-22K | |
| R10 | 8200Ω | 1 | C84822 | BTA-8200 | |
| R11 | 47Ω | ½ | B84470 | | |
| R12 | 2.2Meg | ½ | B85225 | BTS-2.2Meg | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | AIRLINE PART No. | IRC PART No. | |
| R13 | 150Ω | ½ | B85151 | BTS-150 | |
| R14 | 47KΩ | ½ | B84473 | BTS-47K | |
| R15 | 47KΩ | ½ | B85473 | BTS-47K | |
| R16 | 470KΩ | ½ | B84474 | BTS-470K | |
| R17 | 10Meg | ½ | B85106 | BTS-10Meg | |
| R18A | 470KΩ | ½ | ♦ 76X5 | BTS-470K | |
| B | 470KΩ | ½ | | BTS-470K | |
| R19 | 12KΩ | ½ | B84123 | BTS-12K | Note 1. |
| R20 | 300Ω | ½ | B84301 | | |
| R21 | 1200Ω | 2 | D84122 | BTB-1200 | |

Note 1. Some models may use a 15KΩ resistor in this application.
Note 2. Some models may use a 820Ω resistor in this application.
♦ Items R18A, R18B, C15A, C15B, C15C are combined in one unit.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | AIRLINE PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. |
| T1 | 117VAC .28A | 370VCT .047A | 6.3VCT 2.3A | | 53X327 | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | AIRLINE PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T2 | 6.5KΩ | 3.8Ω | 440Ω | .7Ω | 51X152 | A-3877 ① | A-2931 ① | RO-9 ① | S-3X | ① Drill one new mounting hole. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | AIRLINE PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 6" | PM | 3.8Ω | 12A509 | ST-108 Mod P6-X | 6A1 | |

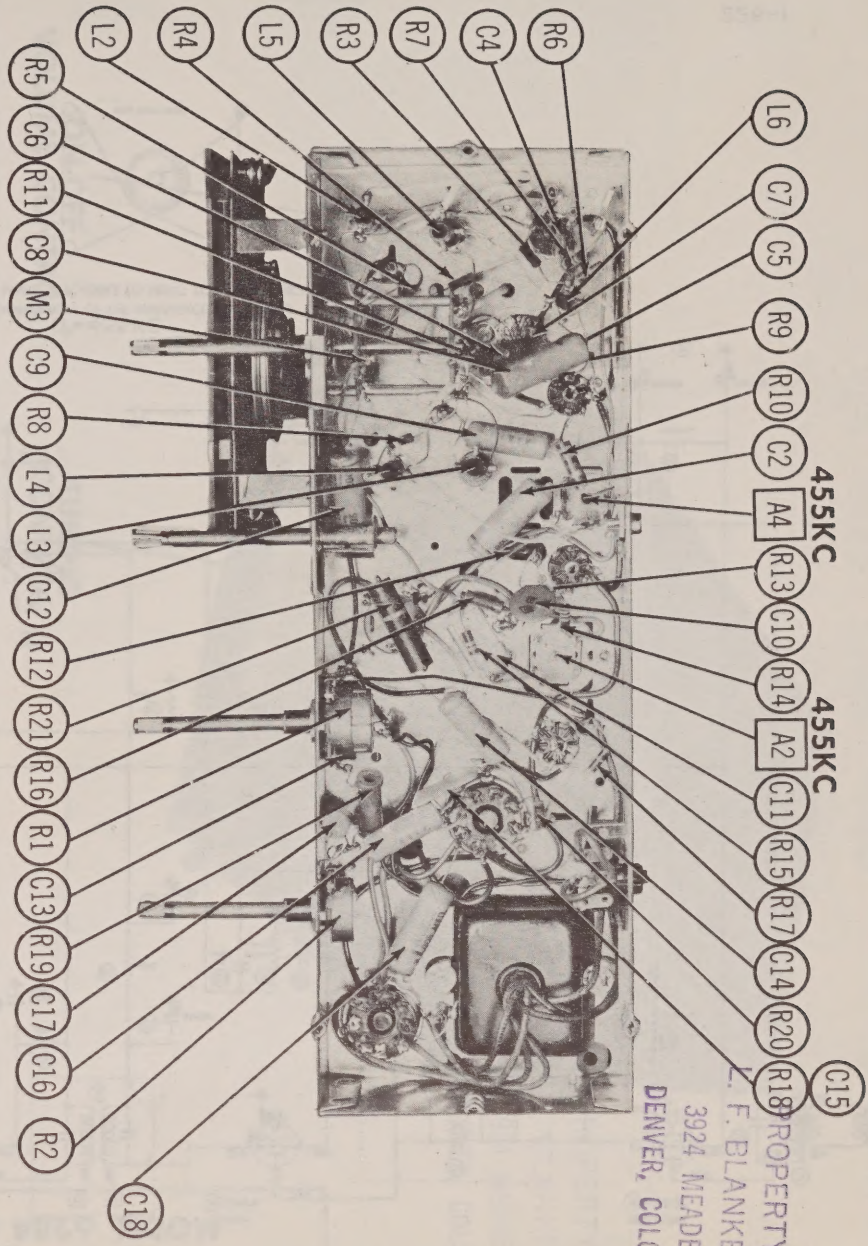
## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | AIRLINE PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | BC Loop Ant. | 0Ω | 1.5Ω | 9A2265 | | | | Includes trimmer capacitor |
| L2 | SW Ant. Coil | 0Ω | .2Ω | 9A2268 | | | | |
| L3 | BC RF Coil | 6Ω | | 9A2264 | | | | |
| L4 | SW RF Coil | .2Ω | | 9A2267 | | | | |
| L5 | BC Osc. Coil | .4Ω | 5Ω | 9A2263 | | | 71-Osc. | |
| L6 | SW Osc. Coil | 0Ω | .2Ω | 9A2266 | | | | |
| L7 | Input IF | 15Ω | 15Ω | 9A2108 | 16-6758 | BC-352 | 12-C1 | |
| L8 | Output IF | 13Ω | 15Ω | 9A2063 | 16-6758 | BC-353 | 12-C2 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | AIRLINE PART No. | NOTES |
|---|---|---|---|
| M1 | Dial light | 7A103 | Type #47 |
| M2 | Tuning capacitor | 14A220 | 14-310MMF, 14-310MMF, 13-140MMF, 10-85MMF, 10-85MMF, 10-85MMF. |
| M3 | Switch | 2A429 | Function selector |
| A13 | Trimmer cap. | 17A265 | Antenna (Shortwave) |
| | Cabinet | 55X428 | |
| | Dial glass | 58X760 | Order must include four mounting spring, Part #28X564. |
| | Pointer | 15X271 | |
| | Bracket assembly | S-25X83 | |
| | Knob | 10A802 | Off-on-volume, tone, function selector, tuning (4 Used) |

## CHASSIS—BOTTOM VIEW

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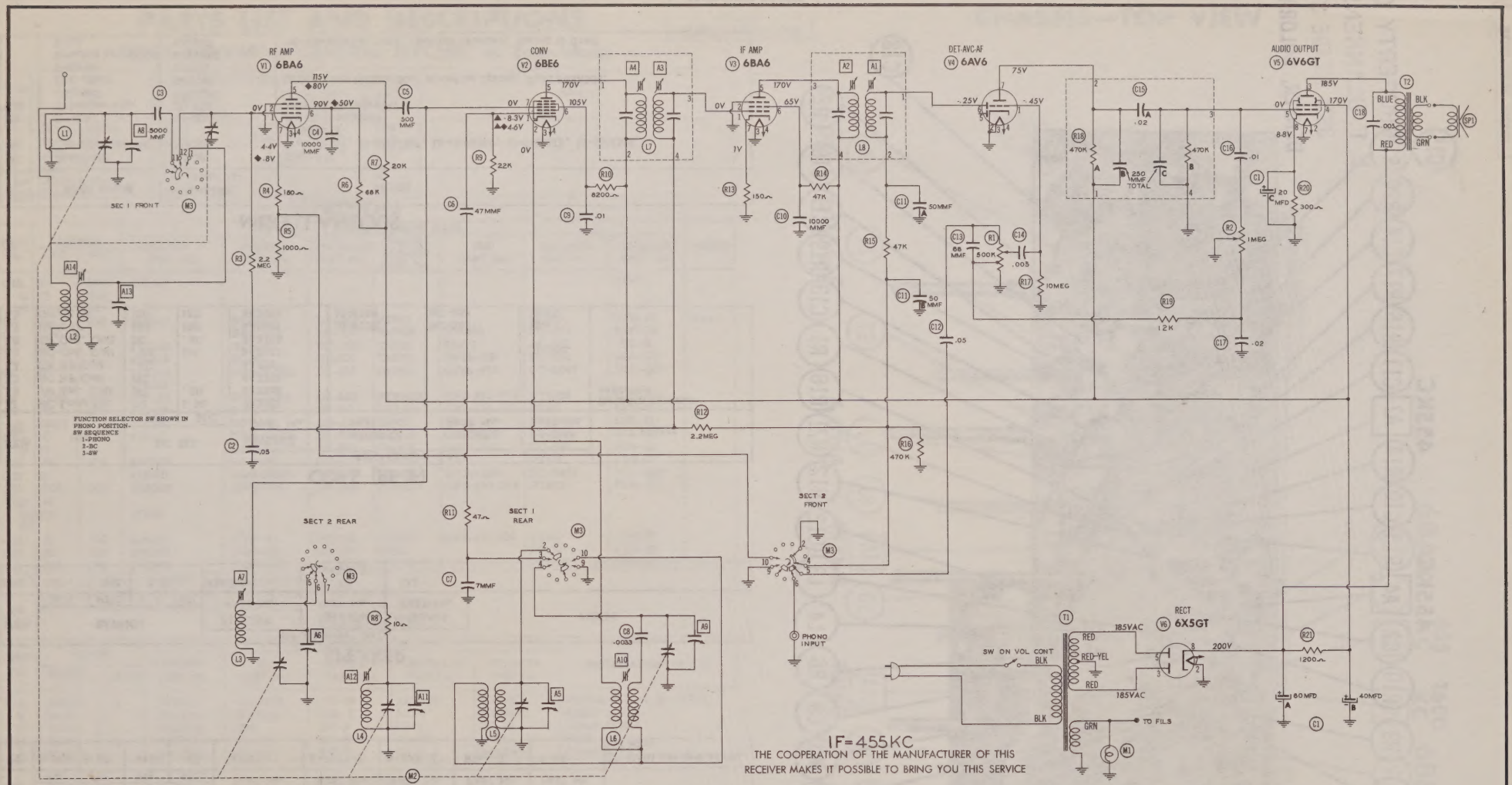
AIRLINE MODEL 35WG-1573B




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BA6 | 4.9Meg ▪4.4Meg | 0Ω | 0Ω | .1Ω | † 21KΩ | †70KΩ | 1.1KΩ ▪150Ω | |
| V 2 | 6BE6 | 23KΩ | 40 ♦ 0Ω | 0Ω | .1Ω | † 1.2KΩ | † 9.6KΩ | 80 ♦ 3.8Ω | |
| V 3 | 6BA6 | 2.7Meg ▪3.2Meg | 0Ω | 0Ω | .1Ω | † 1.2KΩ | † 48KΩ ▪ 47KΩ | 150Ω | |
| V 4 | 6AV6 | 10Meg | 0Ω | 0Ω | .1Ω | 0Ω | 820KΩ | † 470KΩ | |
| V 5 | 6V6GT | INF | .1Ω | † 440Ω | † 1.2KΩ | 470KΩ | INF | 0Ω | 300Ω |
| V 6 | 6X5GT | INF | 0Ω | 123Ω | INF | 110Ω | INF | .1Ω | 150KΩ |

ALL MEASUREMENTS TAKEN IN "BROADCAST" POSITION UNLESS OTHERWISE SPECIFIED.
♦ TAKEN WITH VACUUM TUBE VOLTMETER.
▪ MEASURED IN "SHORTWAVE" POSITION.
▪ MEASURED IN "PHONO" POSITION.
† MEASURED FROM PIN 8 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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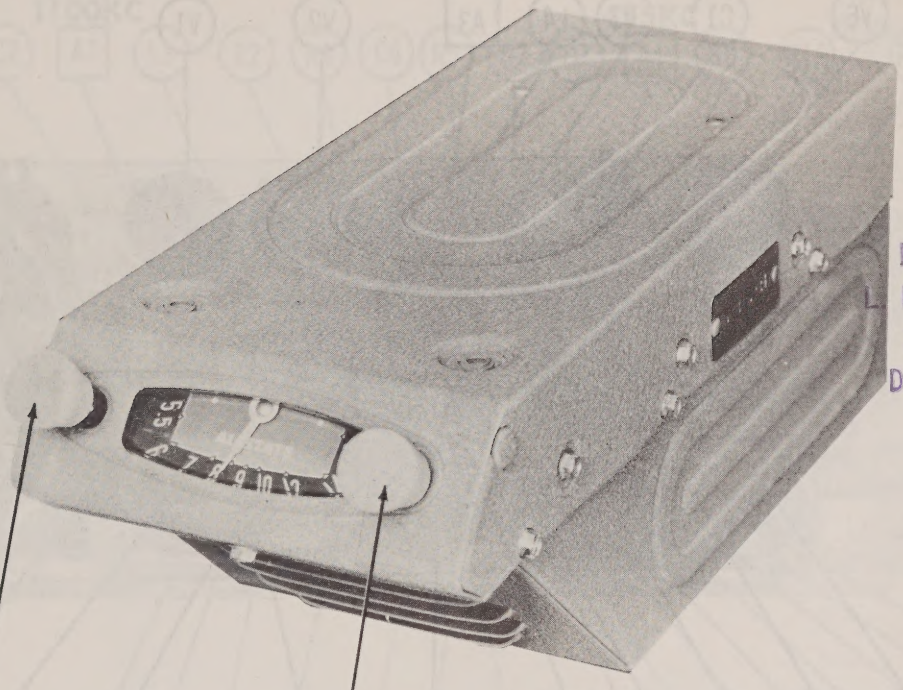
1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

# ALLSTATE
# MODEL 6284 (Ch. 528.6284)

ALLSTATE
MODEL 6284 (Ch. 528.6284)



PROPERTY OF
F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ON-OFF VOLUME CONTROL

TUNING CONTROL

ALLSTATE
MODEL 6284 (Ch. 528.6284)

| | |
|---|---|
| TRADE NAME | Allstate Model 6284 (Ch. 528.6284) |
| SUPPLIER | Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill. |
| TYPE SET | Battery Operated AM Automatic Superheterodyne Receiver for Custom or Univeral Installations |
| TUBES (Six) | Types 6SK7GT RF Amp., 6SA7GT Conv., 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF Amp., 6V6GT Audio Output, 6X5GT Rectifier |
| POWER SUPPLY | 6 Volt Storage Battery — RATING 5.6 Amp. @ 6.3 Volts DC |
| TUNING RANGE—BROADCAST | 540-1600KC |

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer turn tuning gang fully open and set pointer directly over white dot of high frequency end of dial.
When reinstalling the chassis into the case the screw connecting the spark plate to the "A" terminal (inside case) should be tightened very securely for proper receiver operation.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 8 (grid) of 6SA7 (V2). Low side to chassis. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum deflection. |
| 2. | 75MMF | High side to antenna receptacle. Low side to chassis. | 1600KC | " | " | A5 | " |
| 3. | Turn A7 one turn from tight. | | | | | | |
| 4. | 75MMF | High side to antenna receptacle. Low side to chassis. | 1400KC | Tune to 1400KC signal | Across voice coil | A6 | Adjust for maximum deflection. |
| 5. | " | " | 600KC | Tune to 600KC signal | " | A8 | " |
| 6. | Repeat steps 4 and 5. | | | | | | |
| | With receiver installed in car and antenna fully extended tune to a weak station near 1100KC and adjust A7 for maximum volume | | | | | | |

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# PARTS LIST AND DESCRIPTIONS

ALLSTATE
MODEL 6284 (Ch. 528.6284)

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | ALLSTATE PART No. | STANDARD REPLACEMENT | | |
| V1 | RF Amplifier | 6SK7GT | 6SK7GT | 8N | |
| V2 | Converter | 6SA7GT | 6SA7GT | 8AD | |
| V3 | IF Amplifier | 6SK7GT | 6SK7GT | 8N | |
| V4 | Det-AVC-AF Amp. | 6SQ7GT | 6SQ7GT | 8Q | |
| V5 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V6 | Rectifier | 6X5GT | 6X5GT | 6S | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | ALLSTATE PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | 30 | 350 | A18-289 | AFH3-109 | | CO83 | | FP330 | TVL-3636 | |
| B | 20 | 350 | | | | | | | | |
| C | 20 | 25 | | | | | | | | |
| C2 | .01 | 400 | A16-192 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C3 | .1 | 400 | A16-208 | P488-1 | DF-104 | PTE4P1 | | PT401 | 4TM-P1 | |
| C4 | 100 | | A15-196 | SI100 | D6-101 | TM5T1 | GP1K-101 | UC-531 | 5GA-T1 | |
| C5 | 50 | | A15-204 | SI50 | D6-500 | TM5Q5 | GP1K-500 | UC-545 | 5GA-Q5 | |
| C6 | 12 | | A15-205 | | | | | | | |
| C7 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | Note 1 |
| C8 | 250 | | A15-176 | 1468-00025 | D6-251 | 5W5T25 | GP2K-251 | MC240 | 1FM-325 | |
| C9 | .005 | 600 | A16-190 | P688-005 | D6-502 | PTE6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C10 | 1000 | | A16-195 | SI1000 | D6-102 | TM5D1 | GP2-333-102 | UC-521 | 5HK-D1 | |
| C11 | .05 | 600 | A16-193 | P688-05 | DF-503 | PTE6S5 | | PT615 | 6TM-S5 | |
| C12 | .01 | 400 | A16-201 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C13 | .5 | 100 | A16-215 | VHC-36 | | MP2P5 | | RF480 | HC-3 | |
| C14 | .5 | 100 | A16-215 | VHC-36 | | MP2P5 | | RF480 | HC-3 | |
| C15 | .005 | 1600 | A16-185 | BCD-9 | | PTE16D5 | | PT1625 | MB-D5 | |

Note 1. Some Models use a .1MFD @ 400V in this application.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | ALLSTATE PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 500KΩ | ½ | A24-182 | Q13-133 | AG-60-Z | BSK-60-S | U-48 | Volume |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | Not Req. | Not Req. | Attach to C1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to C1A |

## RESISTORS

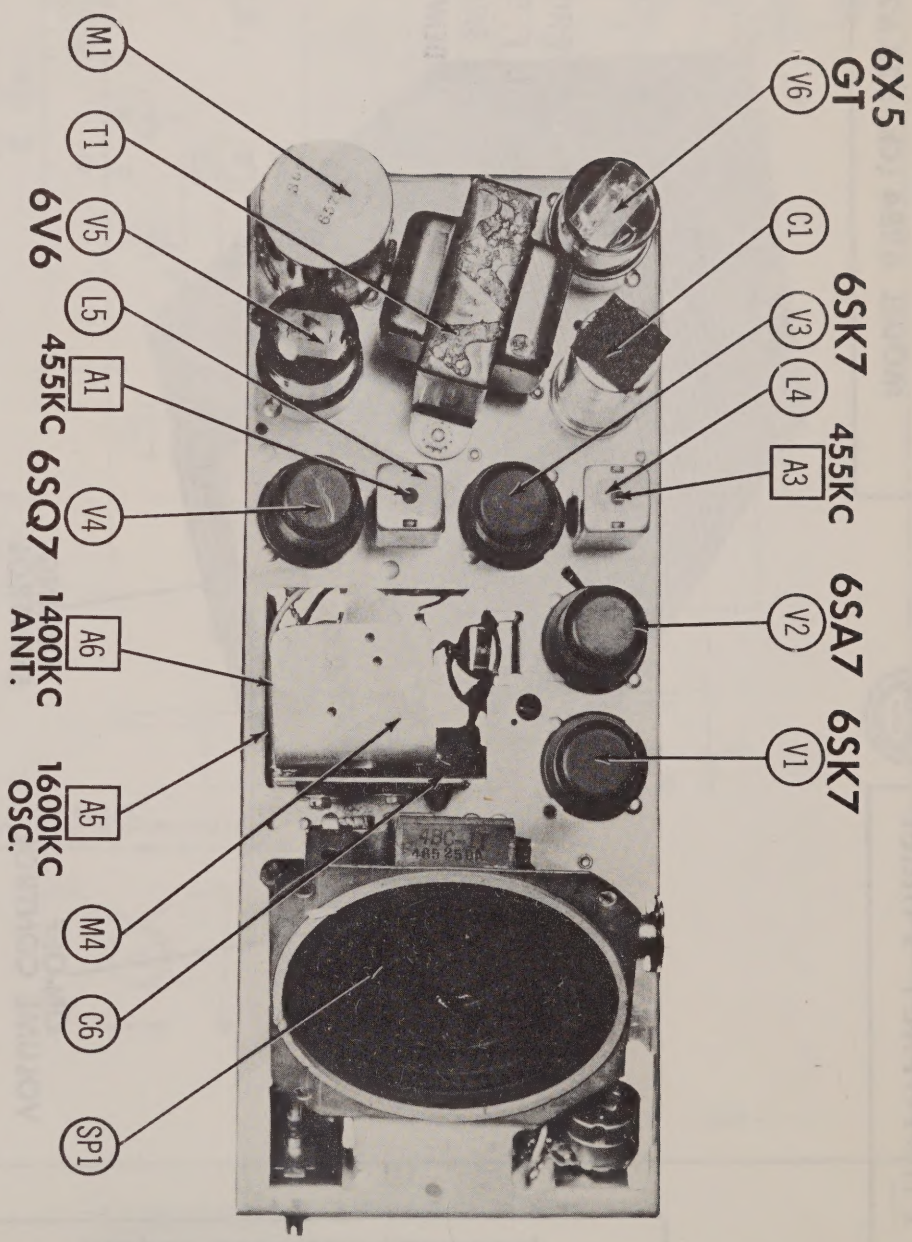
| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | ALLSTATE PART No. | IRC PART No. | |
| R2 | 560Ω | ½ | A60-758 | BTS-560 | |
| R3 | 22KΩ | ½ | A60-659 | BTS-22K | |
| R4 | 47KΩ | ½ | A60-685 | BTS-47K | |
| R5 | 22KΩ | ½ | A60-659 | BTS-22K | |
| R6 | 560Ω | ½ | A60-758 | BTS-560 | |
| R7 | 7500Ω | 2 | A60-769 | BTB-7500 | |
| R8 | 2.2Meg | ½ | A60-726 | BTS-2.2Meg | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | ALLSTATE PART No. | IRC PART No. | |
| R9 | 10MegΩ | ½ | A60-728 | BTS-10Meg | |
| R10 | 220KΩ | ½ | A60-667 | BTS-220K | |
| R11 | 470KΩ | ½ | A60-731 | BTS-470K | |
| R12 | 270Ω | ½ | A60-771 | BTS-270 | |
| R13 | 470Ω | ½ | A60-770 | BTS-470 | |
| R14 | 100Ω | ½ | A60-752 | BTS-100 | |
| R15 | 100Ω | ½ | A60-752 | BTS-100 | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | ALLSTATE PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | RCA PART No. |
| T1 | 6.3VCT @ 3A | 390VCT .048ADC | | | 80-243E | | | | | |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | ALLSTATE PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T2 | 5KΩ | 3.2Ω | 360Ω | .34Ω | 80-242 | A-3877 ① | A-2930 ① | RO-302 ① | S-3X ① | ① Bend mounting tabs down, file out slots. Mount on original mounting bracket. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | ALLSTATE PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3.2Ω | 79-379 | ST-113 ① Mod P4-X | 4A1 ① | ① Cut one corner, to clear volume control . |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | ALLSTATE PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coupling | .7Ω | | A10-527 | | | 4612 | 10.6 Microhenries |
| L2 | Ant. Coil | 4.2Ω | | B10-511 | | | | Tapped @ 1.6Ω |
| L3 | Osc. Coil | 6Ω | | A10-512 | 14-1040 * | | 71-Osc. * | Tapped @ 1Ω |
| L4 | Input IF | 22Ω | 22Ω | A10-508 | 16-6758 | BC-352 | 12-C1 | |
| L5 | Output IF | 18Ω | 18Ω | A10-509 | 16-6758 | BC-353 | 12-C2 | |
| L6 | Fil. Choke | 0Ω | | A33-229 | | | 5221 | 1.7 Microhenries |
| L7 | Vibrator Hash Choke | 0Ω | | A33-228 | | | 5221 | 6.7 Microhenries |

* Do not use secondary winding and drill mounting hole.

## VIBRATOR

| ITEM No. | TYPE | INPUT VOLTS | FREQUENCY | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | | | ALLSTATE PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | RADIART PART No. | |
| M1 | Interrupter | 6.3V | 115∿ | A34-105 | 5301 | 859 | 5301 | |

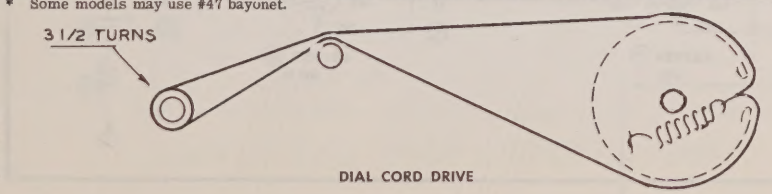
## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ALLSTATE PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | 3AG | 15A | A43-10 | S84-233 (Complete "A" lead assy.) | 311013. (3AG-15A) | 155020 | AGC15 | HDJ |

## MISCELLANEOUS

| ITEM No. | PART NAME | ALLSTATE PART No. | NOTES |
|---|---|---|---|
| M3 | Dial light | | #55 bayonet * |
| M4 | Tuning cap | B19-201 | 2 gang (20-442MMF, 15-185MMF) |
| M5 | Spark Plate | | |
| A7 | Trimmer cap | A20-145 | Antenna trimmer |
| | Knob | A52-316 | Volume and tuning 2 used |
| | Dial scale | B67-567 | |

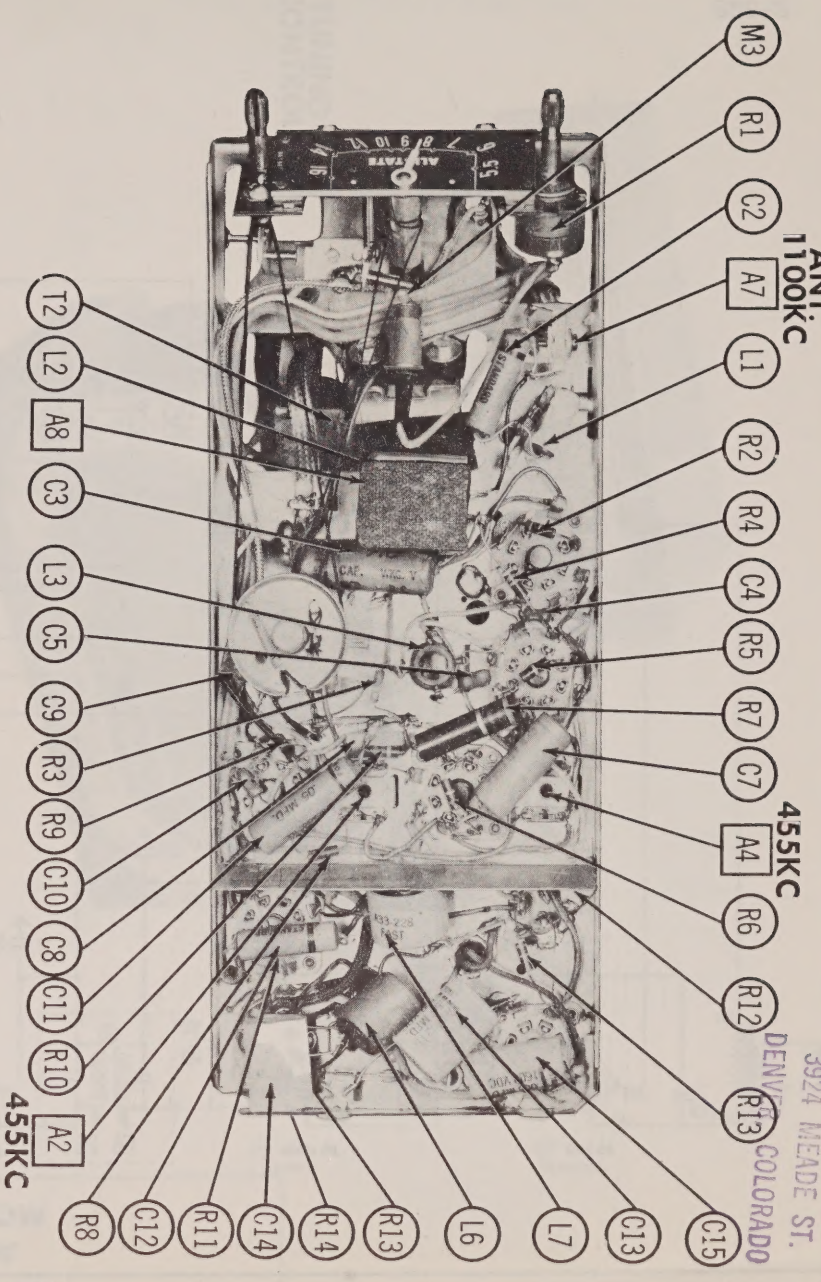
* Some models may use #47 bayonet.




DIAL CORD DRIVE

SET 223 FOLDER 2

## CHASSIS—BOTTOM VIEW




PROPERTY OF
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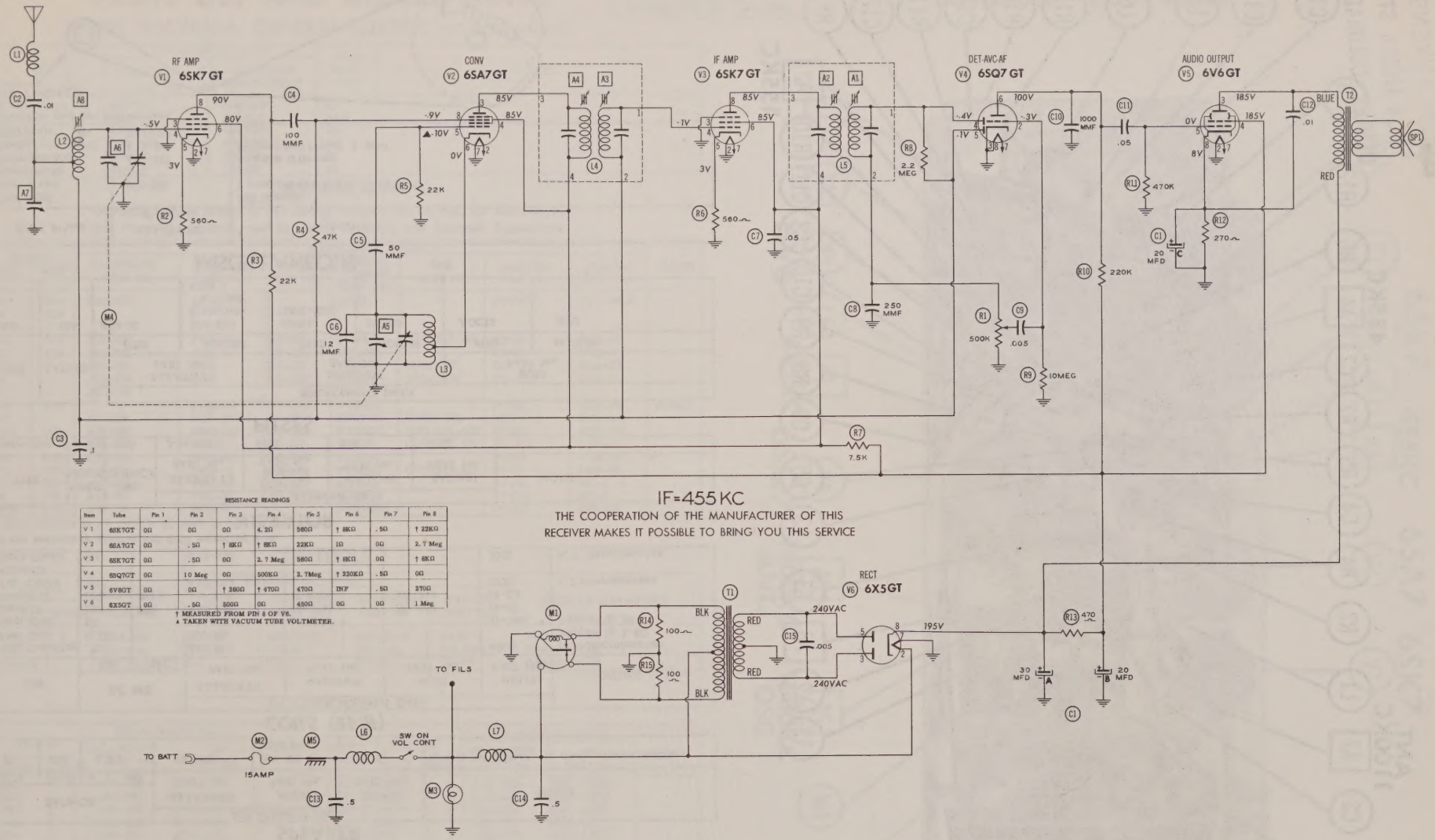
3924 MEADE ST.
DENVER, COLORADO

ALLSTATE MODEL 6284 (Ch. 528.6284)

ALLSTATE MODEL 6284 (Ch. 528.6284)




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6SK7GT | 0Ω | 0Ω | 0Ω | 4. 2Ω | 360Ω | ↑ 8KΩ | . 5Ω | ↑ 22KΩ |
| V 2 | 6SA7GT | 0Ω | . 5Ω | ↑ 8KΩ | ↑ 8KΩ | 22KΩ | 1Ω | 0Ω | 2. 7 Meg |
| V 3 | 6SK7GT | 0Ω | . 5Ω | 0Ω | 2. 7 Meg | 360Ω | ↑ 8KΩ | 0Ω | ↑ 8KΩ |
| V 4 | 6SQ7GT | 0Ω | 1 0 Meg | 0Ω | 500KΩ | 2. 7Meg | ↑ 220KΩ | . 5Ω | 0Ω |
| V 5 | 6V6GT | 0Ω | 0Ω | ↑ 380Ω | ↑ 470Ω | 470Ω | INF | . 5Ω | 270Ω |
| V 6 | 6X5GT | 0Ω | . 5Ω | 500Ω | 0Ω | 450Ω | 0Ω | 0Ω | 1 Meg |

↑ MEASURED FROM PIN 8 OF V6.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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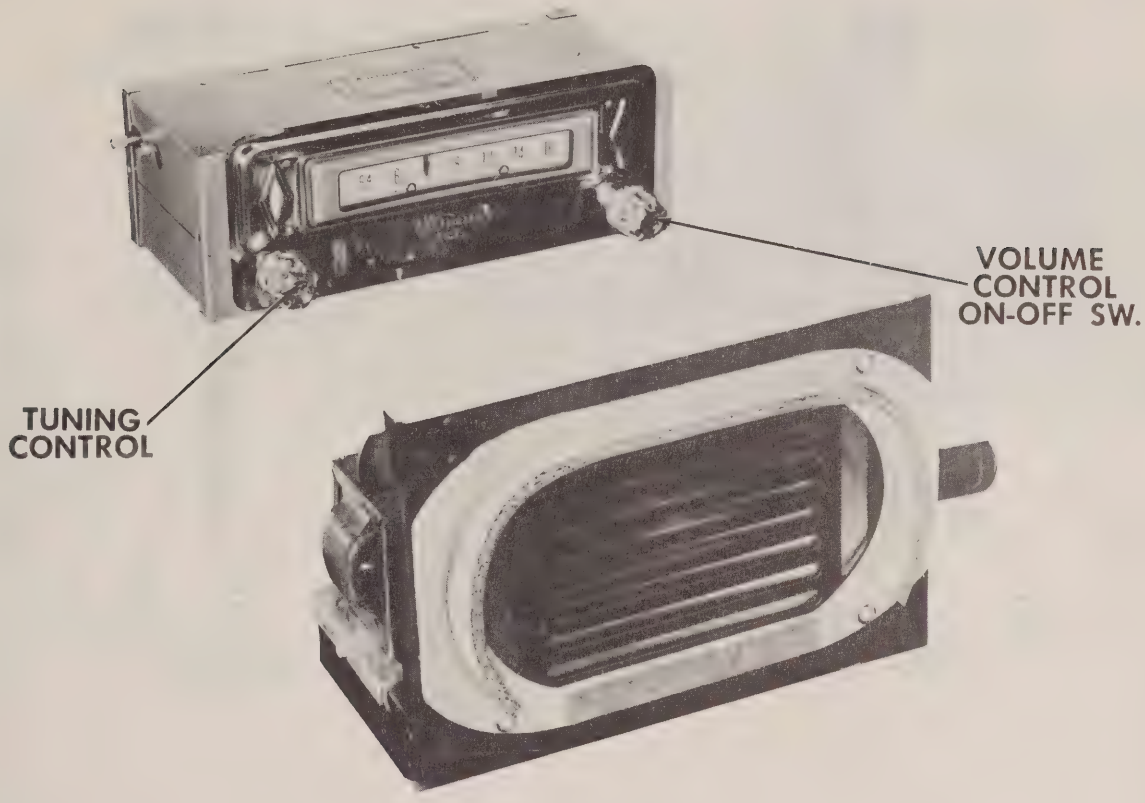
1 - DC Voltages measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

AUTOMATIC
MODEL DM-132




AUTOMATIC
MODEL DM-132

| | |
|---|---|
| TRADE NAME | Automatic Model DM-132 (For 1953 Dodge Automobiles) |
| MANUFACTURER | Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass. |
| TYPE SET | Battery Operated Custom Built Automobile Superheterodyne Receiver |
| TUBES (Six) | Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 (or) 6AT6 Det.-AVC-AF Amp., 6V6 Audio Output, 6X4 Rectifier |
| POWER SUPPLY | 6 Volt Storage Battery — RATING 5.6 Amp. @ 6.3 Volts DC |
| TUNING RANGE—BROADCAST | 538-1610KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 455KC (400~Mod) | High frequency end stop | Across voice coil | A1, A2, A3, A4 | Adjust for maximum deflection. |
| 2. | " | " | 1610KC | " | " | A5 | " |
| 3. | 68MMF | High side to antenna receptacle. Low side to chassis. | 1400KC | Tune to 1400KC signal | " | A6, A7 | Adjust for maximum deflection. Repeat steps 2 and 3. |
| 4. | With radio installed in car and antenna fully extended, tune to a weak station near 1400KC and adjust A7 for maximum volume. | | | | | | |

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# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA: AUTOMATIC PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V2 | Converter | 6BE6 | 6BE6 | 7CH | |
| V3 | IF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V4A | Det-AVC-AF Amp. | 6AV6 | 6AV6 | 7BT | |
| B | Det-AVC-AF Amp. | 6AT6 | 6AT6 | 7BT | |
| V5 | Audio Output | 6V6 | 6V6 | 7S | |
| V6 | Rectifier | 6X4 | 6X4 | 5BS | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: AUTOMATIC PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ■20 | 350 | CE-86 | AFH3-107 | | CO80 | | FP345.8 | TVL-3632 | |
| B | ▲20 | 350 | | | | | | | | |
| C | 20 | 25 | | | | | | | | |
| C2 | .05 | 200 | C503-2 | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C3 | 100 | | CC101 | SI100 | D6-101 | 5W5T1 | GP2K-101 | MC235 | 5GA-Q1 | |
| C4 | .006 | 400 | C602-4 | P485-006 | D6-602 | PTE4D6 | GP2-333-602 | PT426 | 4TM-D6 | |
| C5 | .05 | 200 | C503-2 | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C6 | 5 | | CC50 | SI50 | D6-050 | | GP1K-050 | NT-555 | 5GA-V5 | |
| C7 | 40 | | CC400 | SI40 | D6-400 | | GP1K-400 | UC-5439 | 5GA-Q39 | |
| C8A | 220 | | | | | | | | | |
| B | 5000 | | | | | | | | | |
| C | 5000 | | *PC-151 | *PA-113-2 | *PC-151 | | *1408-02 | | *103C5 | |
| D | 250 | | | | | | | | | |
| E | | | | | | | | | | |
| C9 | .5 | 100 | C504-1 | VHC-36 | | MP-2P5 | | RF-480 | HC-3 | |
| C10 | .5 | 100 | C504-1 | VHC-36 | | MP-2P5 | | RF-480 | HC-3 | |
| C11 | .005 | 200 | C502-2 | P288-005 | D6-502 | PJ2D5 | GP2-333-502 | PT425 | 2TM-D5 | |
| C12 | .01 | 400 | C103-6 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C13 | .008 | 1600 | C802-16 | P1688-008 | | PTE16D8 | | PT1628 | MB-D8 | |

* Items C8A, C8B, C8C, C8D, C8E, R9A, R9B and R9C are combined in one unit.
When replacing items separately items C8D and C8E should total 250MMF.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: AUTOMATIC PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 750KΩ | ½ | RV-W100 | Q13-137 | AG-79-Z | B-70-S | U-51 | Volume-See Note |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |

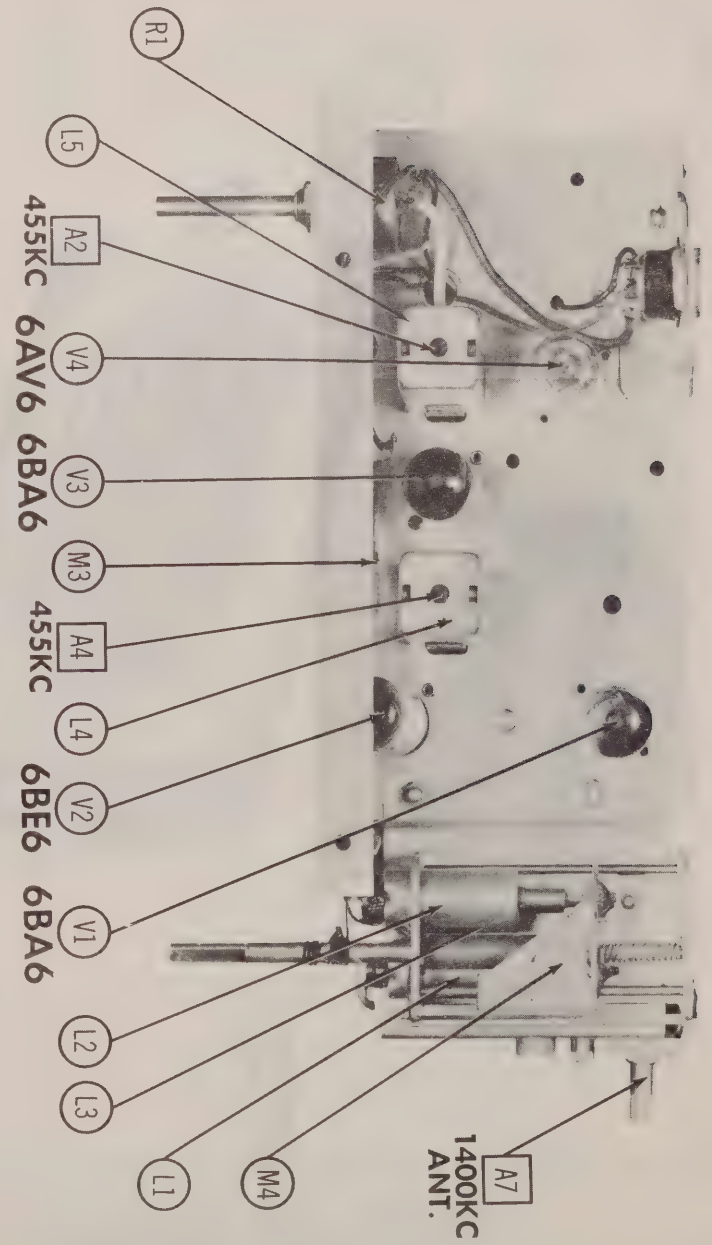
## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AUTOMATIC PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 470KΩ | ½ | R474 | BTS-470K | |
| R3 | 150Ω | ½ | | BTS-150 | Note 1 |
| R4 | 150KΩ | ½ | R154 | BTS-150K | |
| R5 | 47KΩ | ½ | R473 | BTS-47K | |
| R6 | 1500Ω | ½ | | BTS-1500 | Note 2 |
| R7 | 6800Ω | 2 | R682-2 | BTB-6800 | |
| R8 | 2. 2Meg | ½ | | BTS-2. 2Meg | Note 3 |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AUTOMATIC PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R9A | 6. 8Meg | ½ | | BTS-6. 8Meg | |
| B | 470KΩ | ½ | * PC151 | BTS-470K | |
| C | 470KΩ | ½ | | BTS-470K | |
| R10 | 470KΩ | ½ | R474 | BTS-470K | |
| R11 | 330Ω | ½ | R331 | BTS-330 | |
| R12 | 1000Ω | ½ | R102-1 | BTS-1000 | |
| R13 | 100Ω | ½ | R101 | BTS-100 | |
| R14 | 100Ω | ½ | R101 | BTS-100 | |

* Items R9A, R9B, R9C, C8A, C8B, C8C, C8D, C8E, are combined in one unit.
Note 1. Some models may use a 220Ω resistor in this application.
Note 2. Some models may use a 1000Ω resistor in this application.
Note 3. Some models may use a 2 Meg resistor in this application.

# CHASSIS—TOP VIEW



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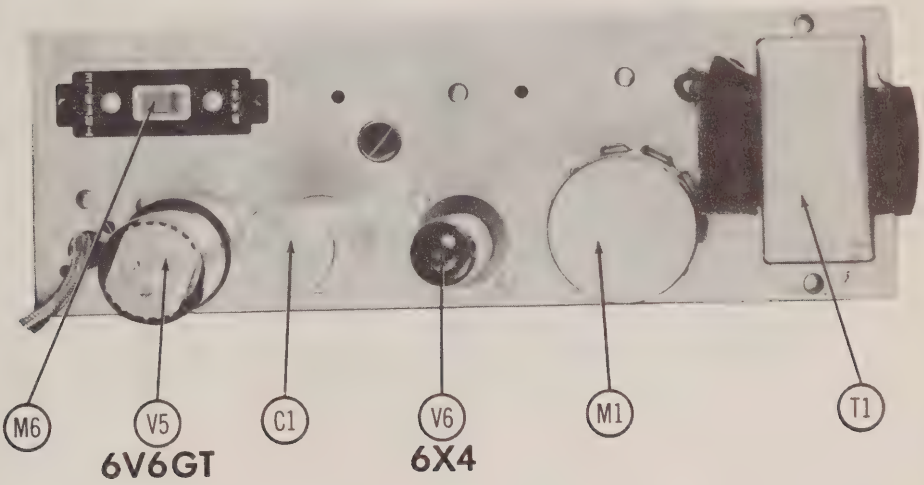


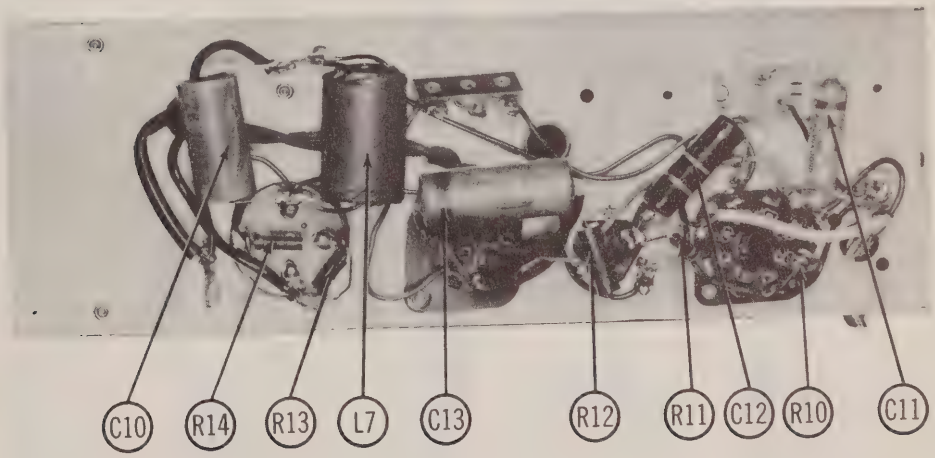

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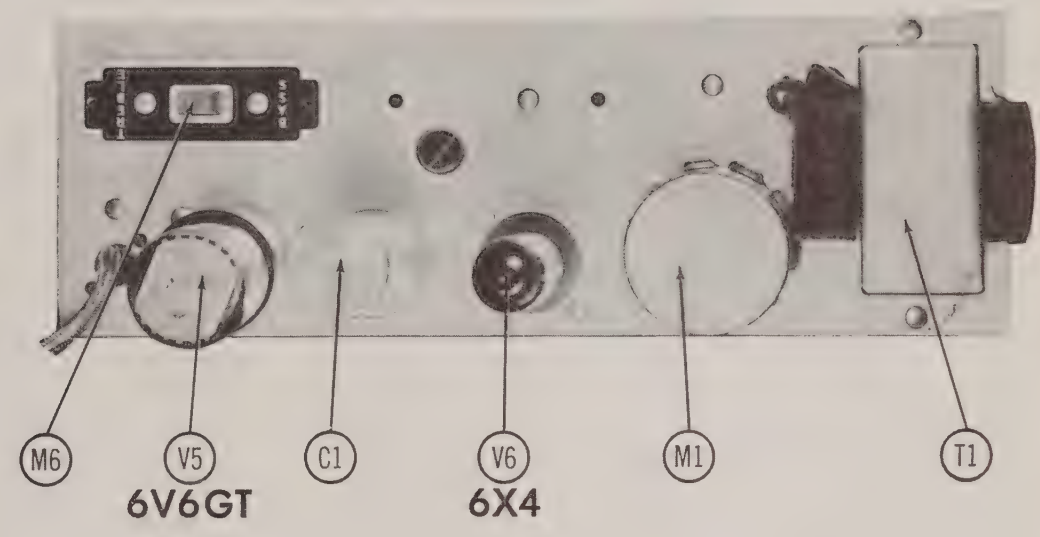


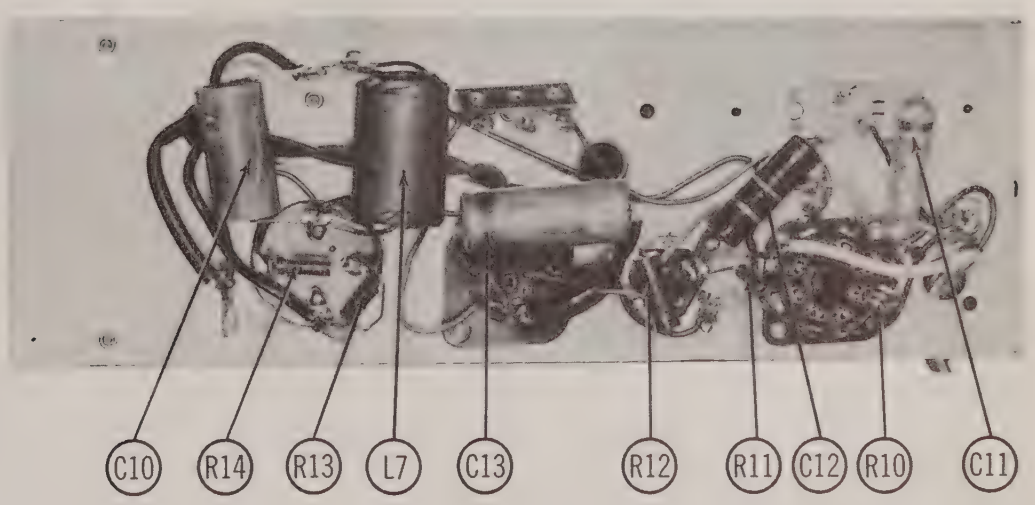

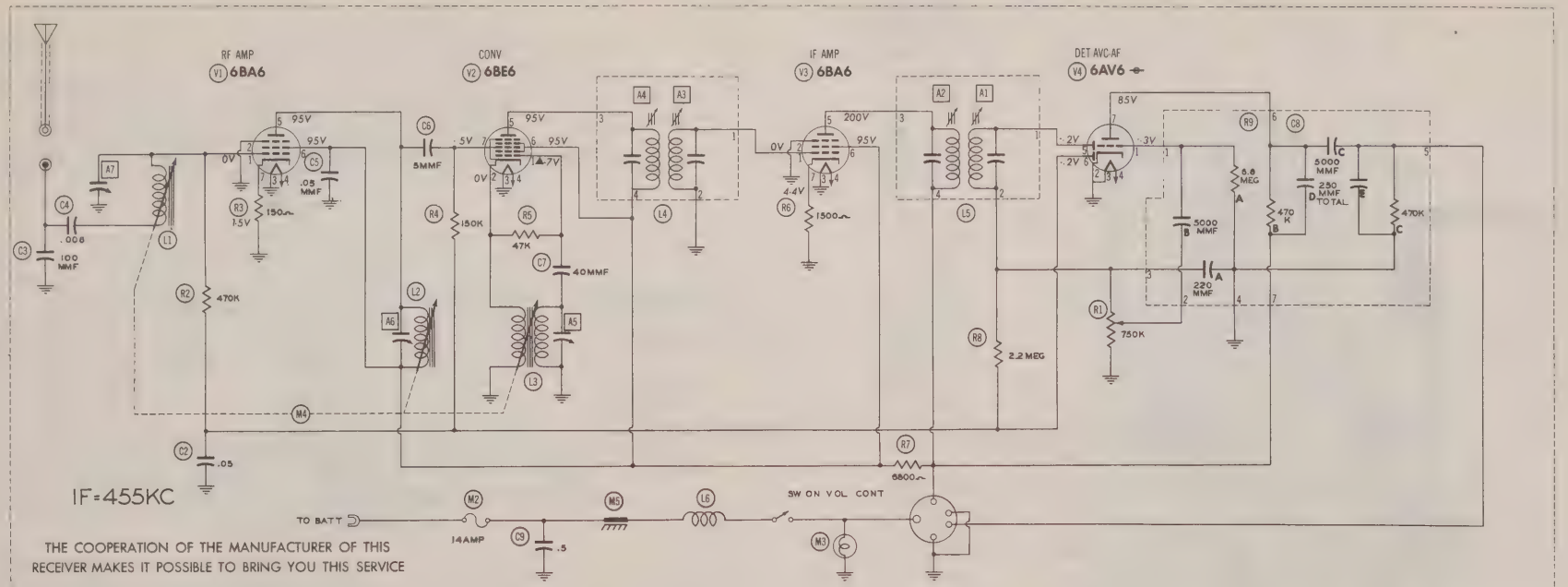


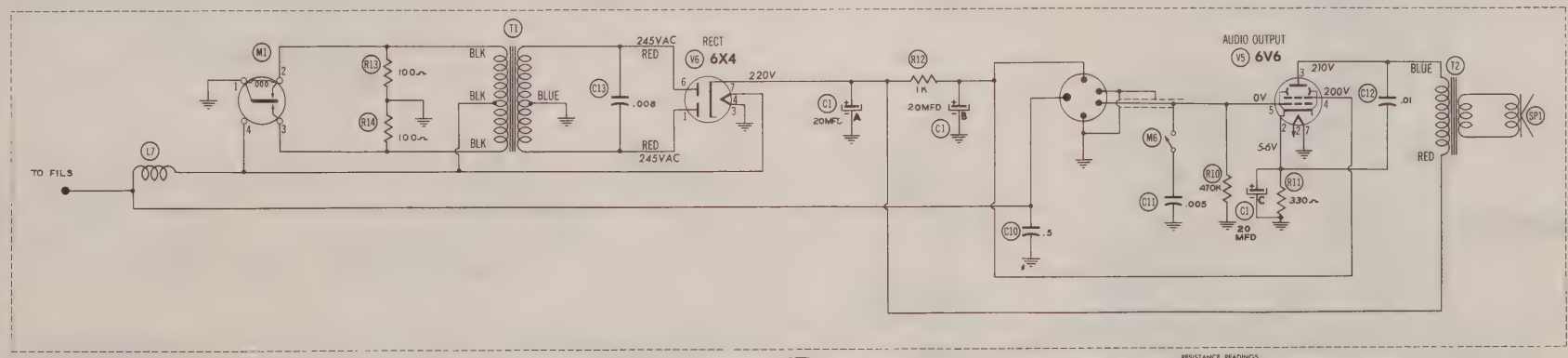


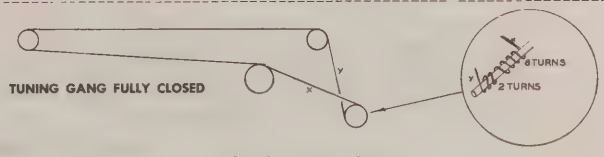


RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 6BA6 | 3.4Meg | 0Ω | 0Ω | .7Ω | †7.8KΩ | †7.8KΩ | 150Ω |
| V 2 | 6BE6 | 47KΩ | .5Ω | 0Ω | .7Ω | †7.8KΩ | †7.8KΩ | 3.1Meg |
| V 3 | 6BA6 | 1MΩ | 0Ω | 0Ω | .7Ω | †1KΩ | †7.8KΩ | 1.5KΩ |
| V 4 | 6AV6 | 5.8Meg | 0Ω | 0Ω | .7Ω | 750KΩ | 3Meg | †470KΩ |
| V 5 | 6V6GT | INF | 330Ω | †335Ω | †1KΩ | 470KΩ | INF | 100KΩ |
| V 6 | 6X4 | 360Ω | INF | 0Ω | .7Ω | INF | 340Ω | 40KΩ |

Δ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V6

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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228-3

1 - DC Voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

# AUTOMATIC MODEL TR-12

PROPERTY OF
L. F. LANKENSHIP
3021 [illegible] ST.
DENVER, COLORADO

AUTOMATIC MODEL TR-12

AUTOMATIC MODEL TR-12

| | |
|---|---|
| TRADE NAME | Automatic Model TR-12 (For tractor installations) |
| MANUFACTURER | Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston Mass. |
| TYPE SET | Battery Operated AM Superheterodyne Automobile Receiver |
| TUBES (Eight) | Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6AV6 Phase Inv., (2) 6AQ5 Audio Output, 6X4 Rectifier |
| POWER SUPPLY | 6 Volt Storage Battery — RATING 6.5 Amp. @ 6.3 Volts DC |
| TUNING RANGE—BROADCAST | 538-1620KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2 A3, A4 | Adjust for maximum deflection. |
| 2. | " | " | 1620KC | " | " | A5 | " |
| 3. | 100MMF | High side to antenna lead. Low side to chassis. | 1400KC | Tune to 1400KC signal | " | A6, A7 | " |
| 4. | " | " | 600KC | Tune to 600KC signal | " | A8 | " |
| 5. | " | " | 600KC | " | " | A9 | " |
| 6. | Repeat steps 2 thru 5. | | | | | | |



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# PARTS LIST AND DESCRIPTIONS

AUTOMATIC
MODEL TR-12

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA: AUTOMATIC PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V2 | Convertor | 6BE6 | 6BE6 | 7CH | |
| V3 | Sound IF Amp. | 6BA6 | 6BA6 | 7BK | |
| V4 | Det.-AVC-AF-Amp. | 6AV6 | 6AV6 | 7BT | |
| V5 | Phase inverter | 6AV6 | 6AV6 | 7BT | |
| V6 | Audio Output | 6AQ5 | 6AQ5 | 7BZ | |
| V7 | Audio Output | 6AQ5 | 6AQ5 | 7BZ | |
| V8 | Rectifier | 6X4 | 6X4 | 5BS | |

## CAPACITORS

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: AUTOMATIC PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ■20 | 350 | CE-86 | AFH3-107 | | CO80 | | FP345.8 | TVL-3632 | |
| B | ▲20 | 350 | | | | | | | | |
| C | 20 | 25 | | | | | | | | |
| C2 | .05 | 200 | C503-2 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C3 | .05 | 200 | C503-2 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C4 | .05 | 200 | C503-2 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C5 | 100 | | CC101 | SI100 | D6-101 | TM5T1 | GP2K-101 | UC-531 | 5GA-Q1 | |
| C6 | 200 | | CC221 | SI200 | D6-201 | TM5T2 | GP2K-201 | UC-532 | 5GA-T2 | |
| C7 | .01 | 600 | C103-6 | P688-01 | D6-103 | PTE6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C8 | 200 | | CC221 | SI200 | D6-201 | TM5T2 | GP2K-201 | UC-532 | 5GA-T2 | |
| C9 | 200 | | CC221 | SI200 | D6-201 | TM5T2 | GP2K-201 | UC-532 | 5GA-T2 | |
| C10 | .005 | 400 | C502-6 | P488-005 | D6-502 | PTE4D5 | GP2-333-502 | PT425 | 4TM-D5 | |
| C11 | .02 | 400 | C203-4 | P488-02 | DD-203 | PTE4S2 | | PT412 | 4TM-S2 | |
| C12 | .02 | 400 | C203-4 | P488-02 | DD-203 | PTE4S2 | | PT412 | 4TM-S2 | |
| C13 | .005 | 600 | C502-6 | P688-05 | DF-503 | PTE6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C14 | .5 | 100 | C504-1 | VHC-36 | | MP2P5 | | RF-480 | HC-3 | |
| C15 | .5 | 100 | C504-1 | VHC-36 | | MP2P5 | | RF-480 | HC-3 | |
| C16 | .008 | 1600 | C802-16 | P1688-008 | | PTE16D8 | | PT1628 | MB-D8 | |

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: AUTOMATIC PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 750KΩ | ½ | RVTR12 | Q13-137 | AG-79-Z | B-70-S | U-51 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AUTOMATIC PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 1.2Meg | ½ | R125 | BTS-1.2Meg | |
| R3 | 330Ω | ½ | R331 | BTS-330 | |
| R4 | 22KΩ | ½ | R223 | BTS-22K | |
| R5 | 3000Ω | ½ | | BTS-3000 | Note 1 |
| R6 | 22KΩ | 2 | R223-2 | BTB-22K | |
| R7 | 2.2Meg | ½ | | BTS-2.2Meg | Note 2 |
| R8 | 4.7Meg | ½ | R475 | BTS-4.7Meg | |
| R9 | 270KΩ | ½ | | BTS-270K | Note 3 |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AUTOMATIC PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R10 | 47KΩ | ½ | R473-S | BTS-47K | |
| R11 | 4700Ω | ½ | R472-S | BTS-4700 | |
| R12 | 82KΩ | ½ | R823-S | BTS-82K | |
| R13 | 470KΩ | ½ | R474-S | BTS-470K | |
| R14 | 330Ω | 1 | R331-1 | BTA-330 | |
| R15 | 470KΩ | 1 | | BTS-470K | Note 4 |
| R16 | 1000Ω | 1 | R102-1 | BTA-1000 | |
| R17 | 100Ω | ½ | R101 | BTS-100 | |
| R18 | 100Ω | ½ | R101 | BTS-100 | |

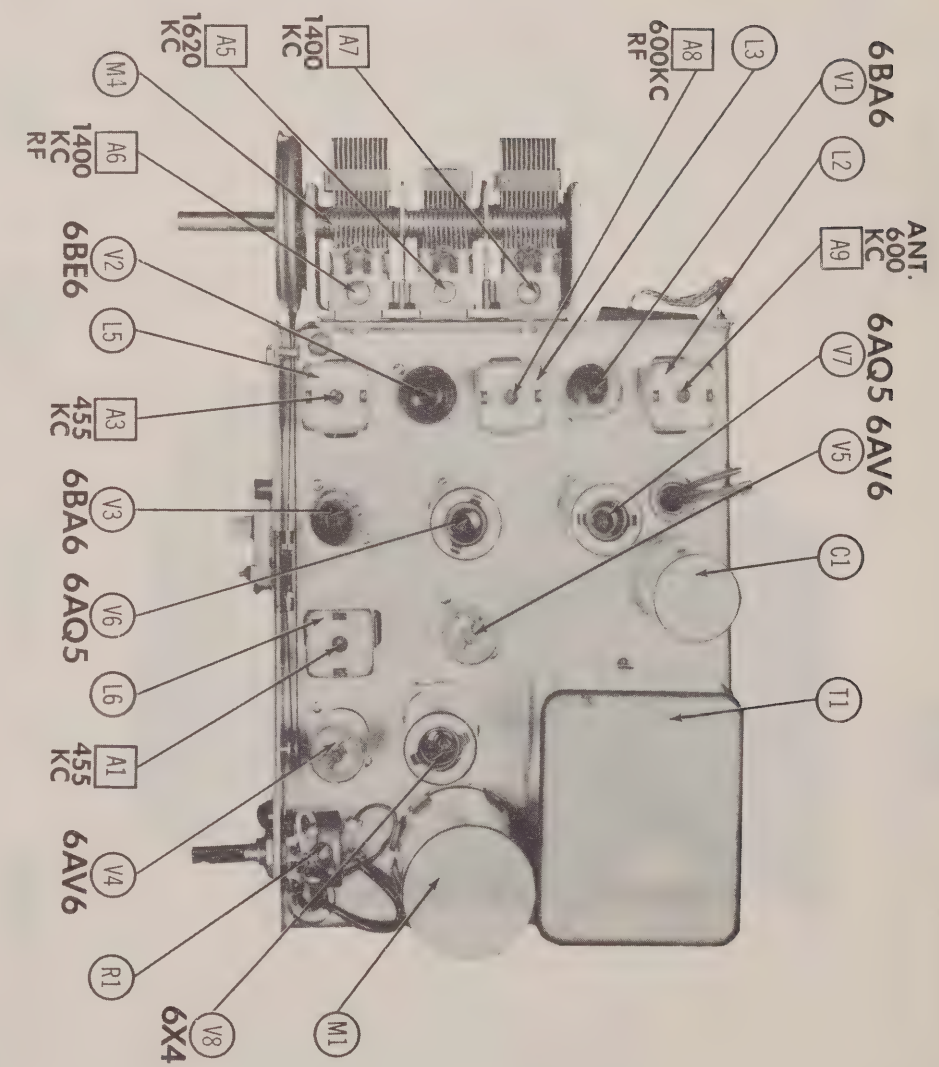
Note 1. Some models may use a 1800Ω resistor in this application.
Note 2. Some models may use a 2 Meg resistor in this application.
Note 3. Some models may use a 240KΩ resistor in this application.
Note 4. Some models may use a 500KΩ resistor in this application.

## TRANSFORMER (VIBRATOR)

| ITEM No. | RATING: PRI. | RATING: SEC. 1 | RATING: SEC. 2 | RATING: SEC. 3 | REPLACEMENT DATA: AUTOMATIC PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 6.3VCT ② 3.4A | 430VCT .053A | | | TV-100EW ① | | | | |

① Special shielding used on this transformer.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | AUTOMATIC PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T2 | 6.2KΩ CT | 3.6Ω | 466Ω CT | .6Ω | Part of Spkr. | A-3823 | A-3020 | RO-303 | S-53X | |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | AUTOMATIC PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 6 x 9" | PM | 3.6Ω | PM-TR12 | ST-810 Mod. P69-V | 69A3 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | AUTOMATIC PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coupling | 1.1Ω | | L200 | | | 4624 * | Wound on 10MMF capacitor in series; part # includes capacitor. |
| L2 | Ant. Coil | 20Ω | 5.5Ω | 57FB-3 | | | | |
| L3 | RF Coil | 95Ω | 6Ω | 57FB-4 | | | | |
| L4 | Osc. Coil | 8.5Ω | | L201 | | | 71-Osc. † | Tapped @ .8Ω |
| L5 | Input IF | 18Ω | 18Ω | 1655-16 | 16-6758 | BC-352 | 12-C1 | |
| L6 | Output IF | 18Ω | 18Ω | 1655-16 | 16-6758 | BC-353 | 12-C2 | |
| L7 | Fil. Choke | 0Ω | | L-202 | | | 5221 | 1.5Microhenries |
| L8 | Vibrator Hash Choke | 0Ω | | L203 | | | 5221 | 21Microhenries |

* Connect 10MMF capacitor in series.
† Drill mounting hole.

## VIBRATOR

| ITEM No. | TYPE | INPUT VOLTS | FREQUENCY | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | | | AUTOMATIC PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | RADIART PART No. | |
| M1 | Interrupter | 6.3V | 115∿ | V-83 | 5301 | 859 | 5301 | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AUTOMATIC PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | 3AG | 15A | A201 | A-TR12 | 311015. (3AG-15A) | 155020 | AGC15 | HDJ |

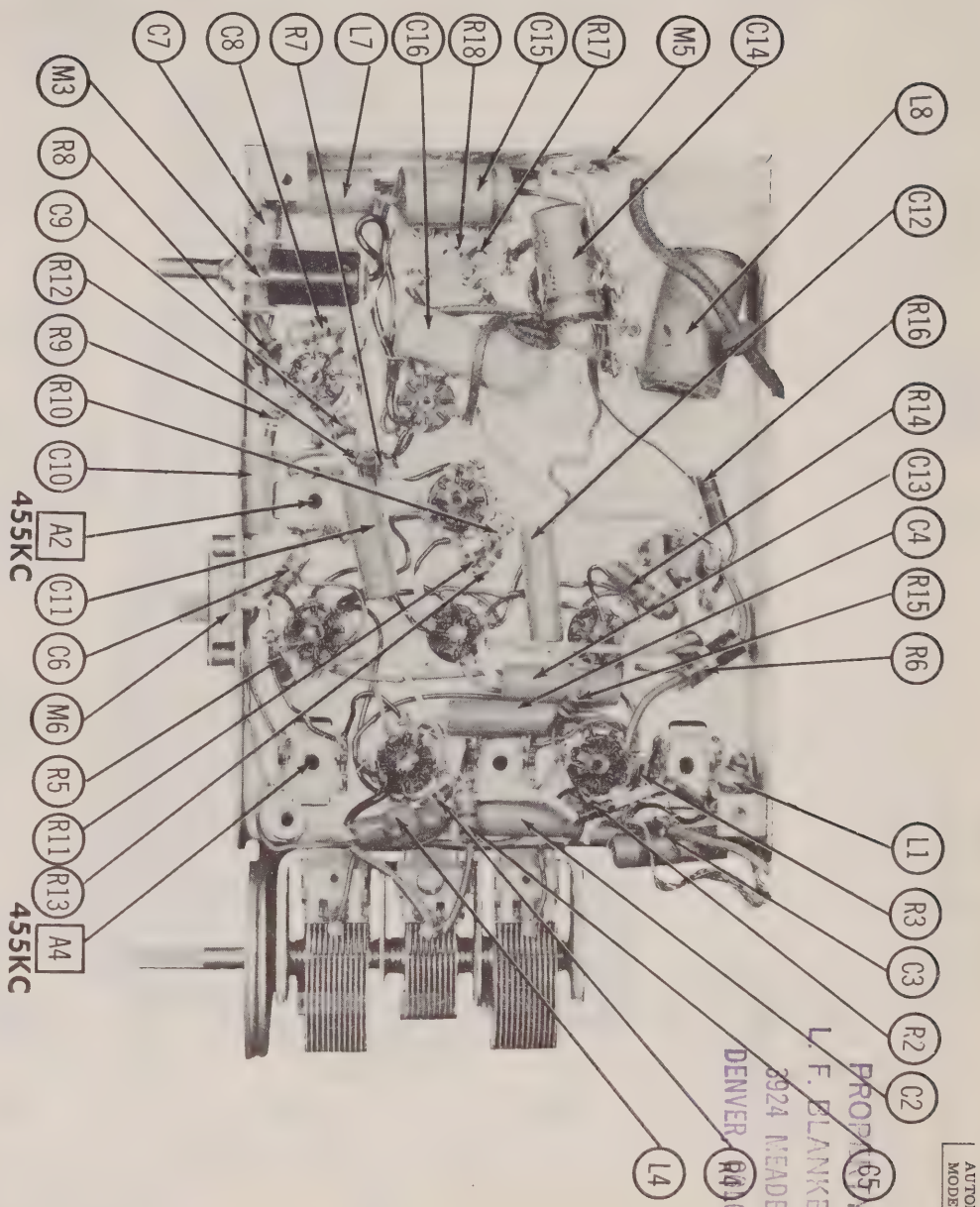
## MISCELLANEOUS

| ITEM No. | PART NAME | AUTOMATIC PART No. | NOTES |
|---|---|---|---|
| M3 | Dial light | T47 | # 47 bayonet |
| M4 | Tuning cap | CV-100A | 3 gang (23-391MMF, 24-387MMF, 35-198MMF) |
| M5 | Spark plate | | |
| M6 | Switch | SS-1 | Tone ( DPST slide) |
| | Knob | H310E | (2) used |
| | Dial scale | D-TR12 | |
| | Antenna | WA-TR12 | Telescopic |
| | Case | H1202 | Less covers |
| | Back cover | H1203 | |
| | Front cover | H1204 | |
| | Shock Mount | H1207 | Rubber |
| | Thumb catch | H1208L | Left |
| | Thumb catch | H1208R | Right |

SET 228 FOLDER 4

AUTOMATIC MODEL TR-12

## CHASSIS—BOTTOM VIEW

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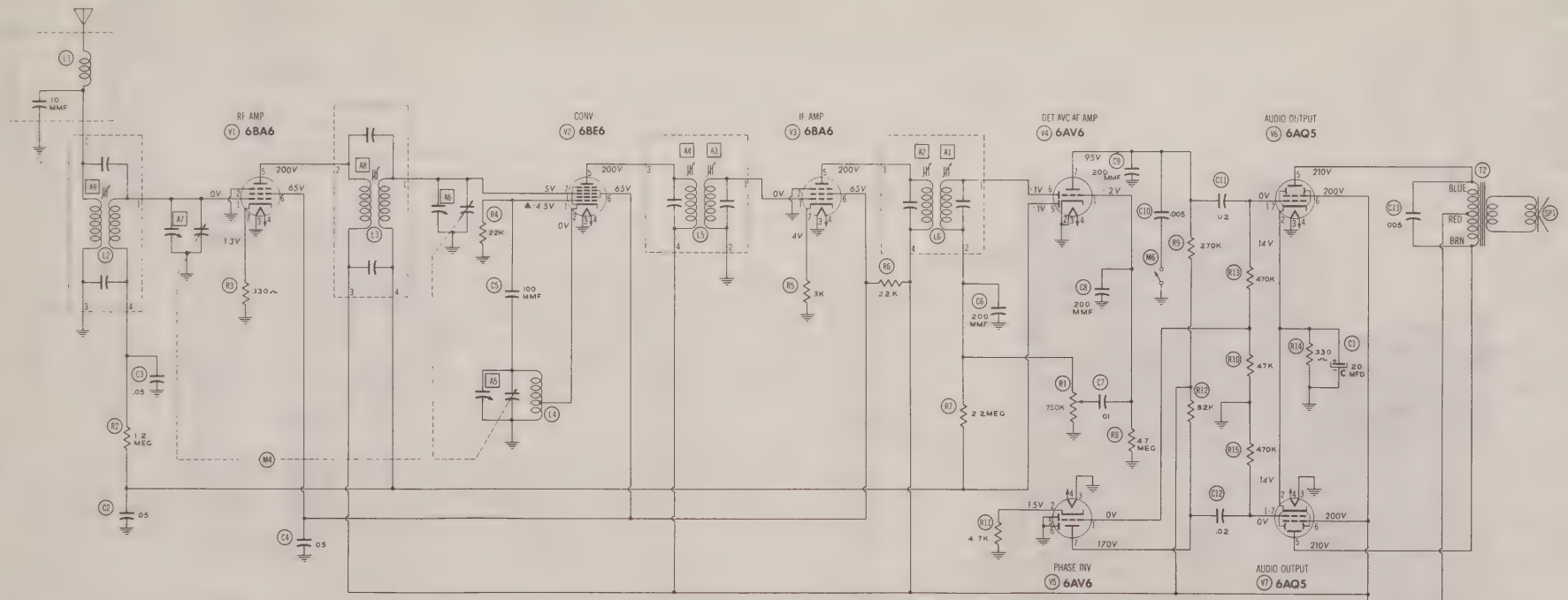
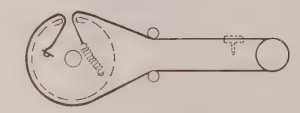
DENVER, COLORADO

AUTOMATIC MODEL TR-12



DIAL CORD

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 6BA6 | 4.1Meg | 0Ω | 0Ω | .5Ω | †1KΩ | †23KΩ | 330Ω |
| V 2 | 6BE6 | 22KΩ | .9Ω | 0Ω | .5Ω | †1KΩ | †23KΩ | 3Meg |
| V 3 | 6BA6 | 18Ω | 0Ω | 0Ω | .5Ω | †1KΩ | †23KΩ | 3KΩ |
| V 4 | 6AV6 | 4.7Meg | 0Ω | 0Ω | .5Ω | 3Meg | 750KΩ | †270KΩ |
| V 5 | 6AV6 | 47KΩ | 4.7KΩ | 0Ω | .5Ω | 0Ω | 0Ω | †93KΩ |
| V 6 | 6AQ5 | 520KΩ | 330Ω | 0Ω | .5Ω | †235Ω | †1KΩ | 520KΩ |
| V 7 | 6AQ5 | 470KΩ | 330Ω | 0Ω | .5Ω | †235Ω | †1KΩ | 470KΩ |
| V 8 | 6X4 | 375Ω | INF | 0Ω | .5Ω | INF | 405Ω | 100KΩ |

* TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V8

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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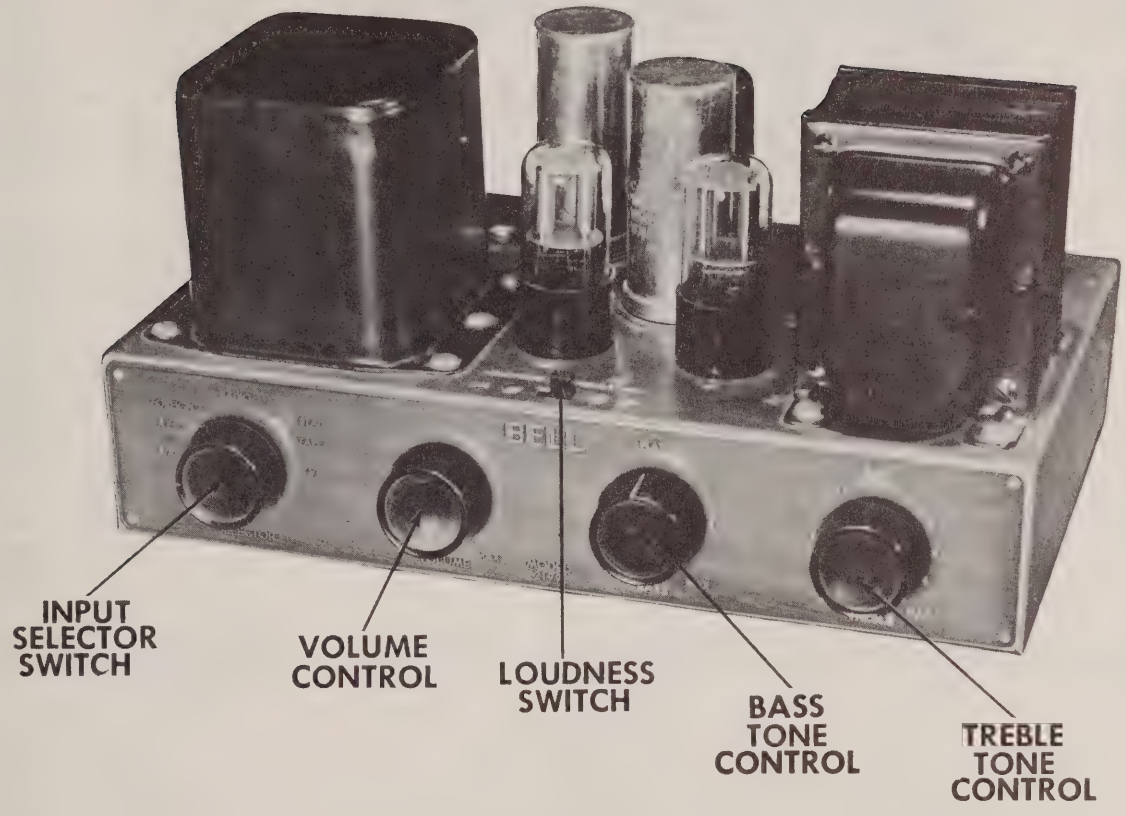
1 - DC Voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

# BELL SOUND MODEL 2199

UNIVERSITY OF
L. F. [illegible]ENGHIP
3330 MEADE ST.
DENVER, COLORADO

BELL SOUND
MODEL 2199




BELL SOUND
MODEL 2199

| | |
|---|---|
| TRADE NAME | Bell Sound Model 2199 |
| MANUFACTURER | Bell Sound Systems, Inc., 555 Marion Rd., Columbus, Ohio |
| TYPE SET | AC Operated 6 Channel 12 Watt Audio Amplifier |
| TUBES (Six) | Types 6SC7 Pre-Amp., 6SL7GT AF Amp., 6SL7GT AF Amp.-Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier |
| POWER SUPPLY | 110-120 Volts AC RATING .68 Amp. @ 117 Volts AC |

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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# PARTS LIST AND DESCRIPTIONS

BELL SOUND
MODEL 2199

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | Bell Sound PART No. | STANDARD REPLACEMENT | | |
| V1 | Pre. Amplifier | 6SC7 | 6SC7 | 8S | |
| V2 | AF Amplifier | 6SL7GT | 6SL7GT | 8BD | |
| V3 | AF Amplifier-Phase Inverter | 6SL7GT | 6SL7GT | 8BD | |
| V4 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V5 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V6 | Rectifier | 5Y3GT | 5Y3GT | 5T | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

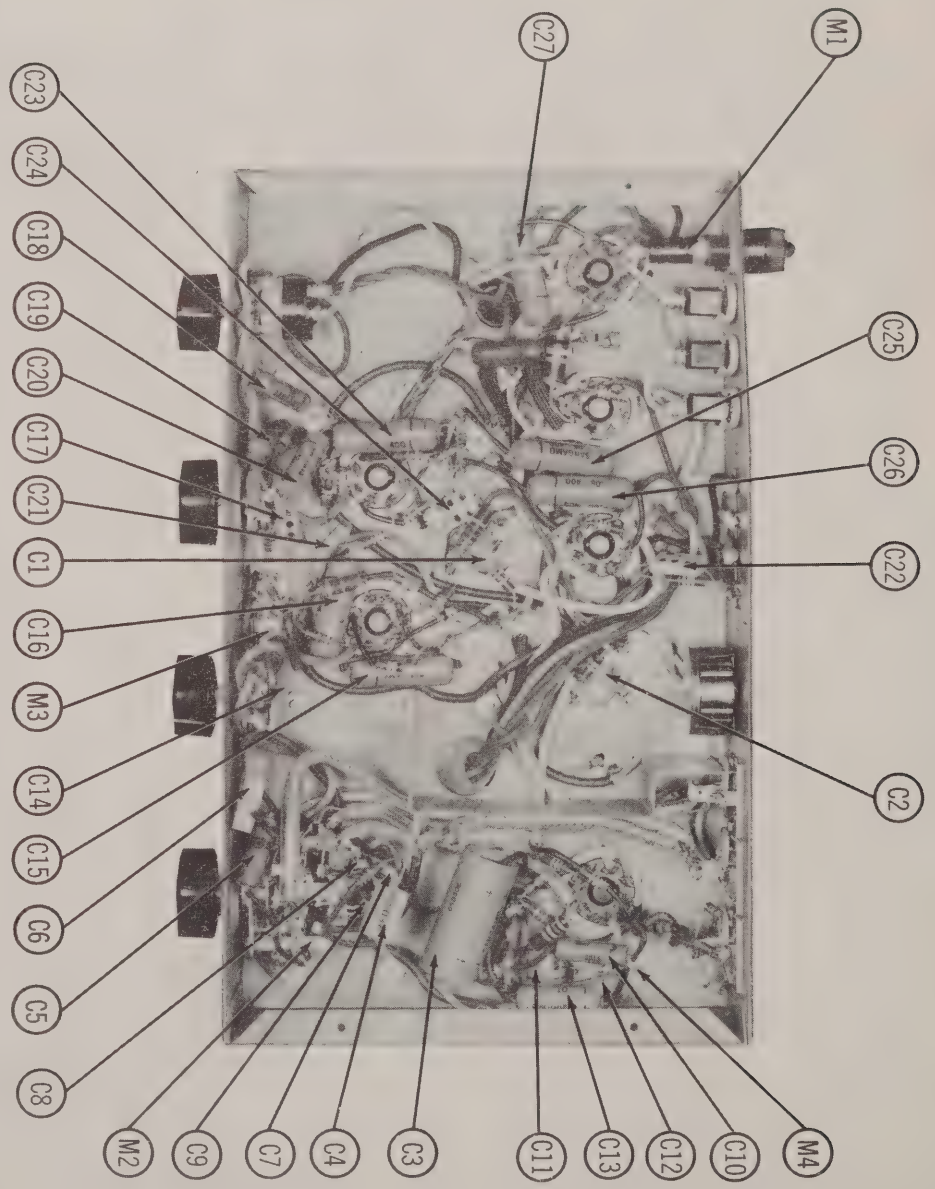
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | BELL SOUND PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ▲40 | 450 | | AFH3-147 | | C110 | | FP369.1 | TVL-3758 | |
| B | ■40 | 450 | | | | | | | | |
| C | ▲40 | 25 | | | | | | | | |
| C2A | ▲40 | 450 | | | | | | | | |
| B | ■40 | 450 | | AFH3-147 | | C110 | | FP369.1 | TVL-3758 | |
| C | ▲25 | 25 | | | | | | | | |
| C3 | 150 | 15 | | PRS15/100 | | BRH5015 | | TC1502 | TVA-1311 | |
| C4 | 36 | 500 | | | | | | | | Note 1 |
| C5 | .001 | 400 | | | | | | | | |
| C6 | 680 | 500 | | | | | | | | |
| C7 | .01 | 400 | | | | | | | | |
| C8 | .003 | 400 | | | | | | | | |
| C9 | .01 | 400 | | | | | | | | |
| C10 | .003 | 400 | | | | | | | | Note 2 |
| C11 | .1 | 400 | | | | | | | | |
| C12 | .02 | 400 | | | | | | | | |
| C13 | .02 | 400 | | | | | | | | |
| C14A | 10000 | | | BPD-01 | DD-1032 | TM5S1 | 811-01 | | 5HK-S1 | Note 3 |
| B | 10000 | | | BPD-01 | DD-1032 | TM5S1 | 811-01 | | 5HK-S1 | Note 3 |
| C | 200 | | | SI200 | D6-201 | 5W5T2 | GP2K-201 | | 5GA-T2 | Note 3 |
| D | 400 | | | SI400 | D6-401 | 5W5T4 | GP2K-401 | | 5GA-T4 | Note 3 |
| C15 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |
| C16 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |
| C17 | 200 | 500 | | 1468-0001 | D6-201 | 5W5T2 | GP2K-201 | MC-237 | 1FM-32 | |
| C18 | .002 | 400 | | | | | | | | |
| C19 | .001 | 400 | | | | | | | | |
| C20 | .01 | 400 | | | | | | | | |
| C21 | 15 | 500 | | | | | | | | |
| C22 | 200 | 500 | | 1468-0002 | D6-201 | 5W5T2 | GP2K-201 | MC-237 | 1FM-32 | |
| C23 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |
| C24 | 100 | 500 | | 1468-0001 | D6-102 | 5W5T1 | GP1K-101 | MC-235 | 1FM-31 | |
| C25 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |
| C26 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |
| C27 | .05 | 400 | | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |

Note 1. Some Models use a 47MMF in this application.
Note 2. Some Models use .004 MMF in this application.
Note 3. Items C14A, C14B, C14C, C14D, R19A, R19B are combined in one unit.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Bell Sound PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 2Meg | ½ | B20066P103 | Q13-139 | AG-66-S | B-76-S | U-55 | Treble |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |
| R2A | 2Meg | ½ | B20066P102 | Q13-139 | AG-66-Z | B-76 | U-55 | Bass |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R2A |
| R3A | 100 Ω | 2 | B20066P115 | W-100 | A43-100 | VK-121 | R100L | Hum Balance (wire wound) |
| B | Shaft | | Not Req. | Not Req. | FKS-1/4 | Not Req. | Not Req. | Attach to R3A |
| R4 | 100KΩ | ½ | B20066P116 | | | | | Volume tapped at 17K & 20K |

## CHASSIS—BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

| ITEM No. | RATING OHMS | RATING WATT | REPLACEMENT DATA BELL SOUND PART No. | REPLACEMENT DATA IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R5 | 27KΩ | ½ | | BTS-27K | |
| R6 | 27KΩ | ½ | | BTS-27K | |
| R7 | 10KΩ | ½ | | BTS-10K | |
| R8 | 1.2Meg | ½ | | BTS-1.2Meg | |
| R9 | 1000Ω | ½ | | BTS-1000 | |
| R10 | 75KΩ | 1 | | BTA-75K | |
| R11 | 27KΩ | ½ | | BTS-27K | |
| R12 | 150KΩ | ½ | | BTS-150K | |
| R13 | 47KΩ | ½ | | BTS-47K | |
| R14 | 1.2Meg | ½ | | BTS-1.2Meg | |
| R15 | 150KΩ | ½ | | BTS-150K | |
| R16 | 10Meg | ½ | | BTS-10Meg | |
| R17 | 390KΩ | ½ | | BTS-390K | |
| R18 | 220KΩ | ½ | | BTS-220K | |
| R19A | 25KΩ | ½ | | BTS-25K | Note 1 |
| B | 25KΩ | ½ | | BTS-25K | |
| R20 | 27KΩ | ½ | | BTS-27K | |
| R21 | 27KΩ | ½ | | BTS-27K | |
| R22 | 100KΩ | ½ | | BTS-100K | |
| R23 | 100KΩ | ½ | | BTS-100K | |
| R24 | 470KΩ | ½ | | BTS-470K | |
| R25 | 240KΩ | ½ | | BTS-240K | |

| ITEM No. | RATING OHMS | RATING WATT | REPLACEMENT DATA Bell Sound PART No. | REPLACEMENT DATA IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R26 | 1600Ω | 1 | | BTA-1600 | |
| R27 | 1300Ω | ½ | | BTS-1300 | |
| R28 | 47KΩ | ½ | | BTS-47K | |
| R29 | 200KΩ | ½ | | BTS-200K | |
| R30 | 20KΩ | ½ | | BTS-20K | |
| R31 | 27KΩ | ½ | | BTS-27K | |
| R32 | 1.2Meg | ½ | | BTS-1.2Meg | |
| R33 | 100KΩ | ½ | | BTS-100K | |
| R34 | 130KΩ | ½ | | BTS-130K | |
| R35 | 1800Ω | ½ | | BTS-1800 | Note 2 |
| R36 | 3300Ω | ½ | | BTS-3300 | |
| R37 | 130KΩ | ½ | | BTS-130K | |
| R38 | 18KΩ | ½ | | BTS-18K | |
| R39 | 270KΩ | ½ | | BTS-270K | |
| R40 | 270KΩ | ½ | | BTS-270K | |
| R41 | 250Ω | 2 | | BTB-250 | |
| R42 | 2700Ω | ½ | | BTS-2700 | |
| R43 | 2200Ω | 1 | | BTA-2200 | |
| R44 | 100KΩ | 2 | | BTB-100K | |
| R45 | 100KΩ | ½ | | BTS-100K | |
| R46 | 390KΩ | ½ | | BTS-390K | |

Note 1. Items R19A, R19B, C14A, C14B, C14C, are combined in one unit.

Note 2. Some models may use a 2200Ω resistor in this application.

## TRANSFORMER (POWER)

| ITEM No. | RATING PRI. | RATING SEC. 1 | RATING SEC. 2 | RATING SEC. 3 | REPLACEMENT DATA Bell Sound PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 117VAC @ .68A | 684VCT .088ADC | 5VAC @ 3A | 6.3VAC @ 1.9A | B-20243 | PC-8409①② | P-3152 ①② | PV-90①② | R-11A ①② |

① Drill new mounting holes.
② Tape 6.3V center tap.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING IMPEDANCE PRI. | RATING IMPEDANCE SEC. | RATING DC RES. PRI. | RATING DC RES. SEC. | REPLACEMENT DATA Bell Sound PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| T2 | 10KΩ CT | 16Ω tap @ 8Ω, 4Ω | 520Ω CT | 1.42Ω tap @ 1Ω, .8Ω | B-20242 | A-3311 ① | A-3132 | PCO-150 | | ① Drill one new mounting hole. |

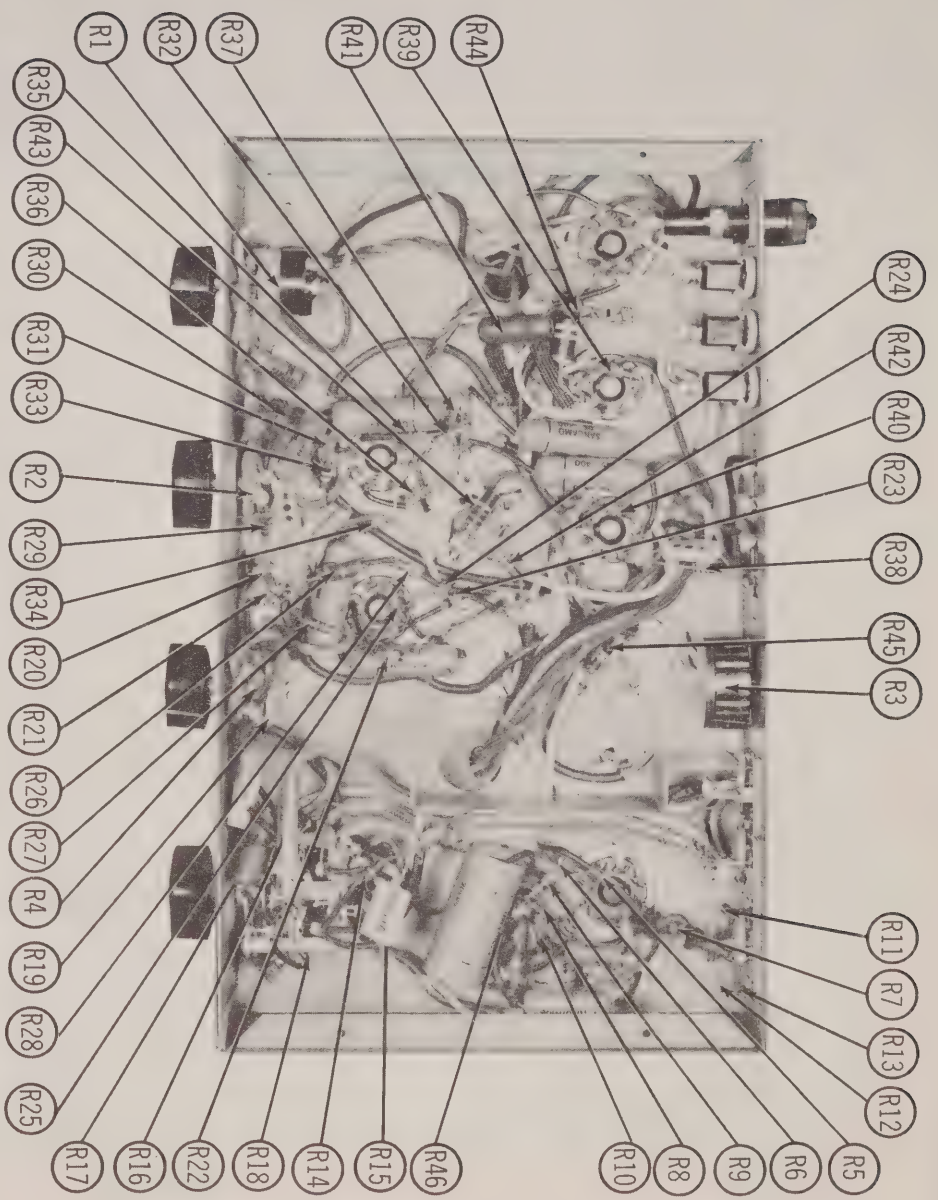
## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA Bell Sound PART No. FUSE | Bell Sound PART No. HOLDER | LITTELFUSE PART No. FUSE | LITTELFUSE PART No. HOLDER | BUSS PART No. FUSE | BUSS PART No. HOLDER |
|---|---|---|---|---|---|---|---|---|
| M1 | 3AG | ½A 250V | | | 31201.5 (3AG-½A) | 342001 | AGC½ | HKP |

## MISCELLANEOUS

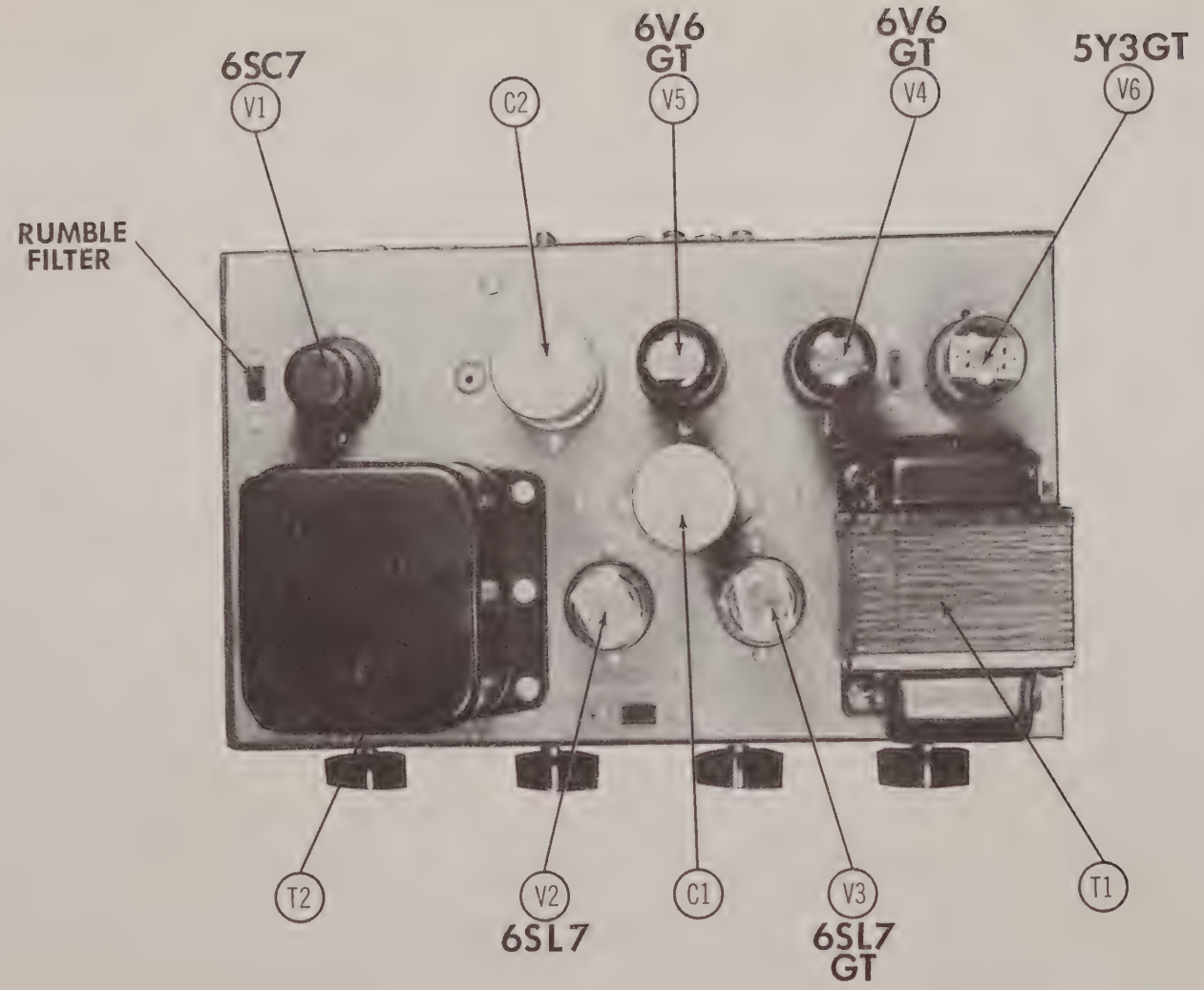
| ITEM No. | PART NAME | Bell Sound PART No. | NOTES |
|---|---|---|---|
| M2 | Switch | | input selector-2sec-7 pos. |
| M3 | Switch | | loudness off-on-DPST |
| M4 | Switch | | rumble filter off-on DPST |

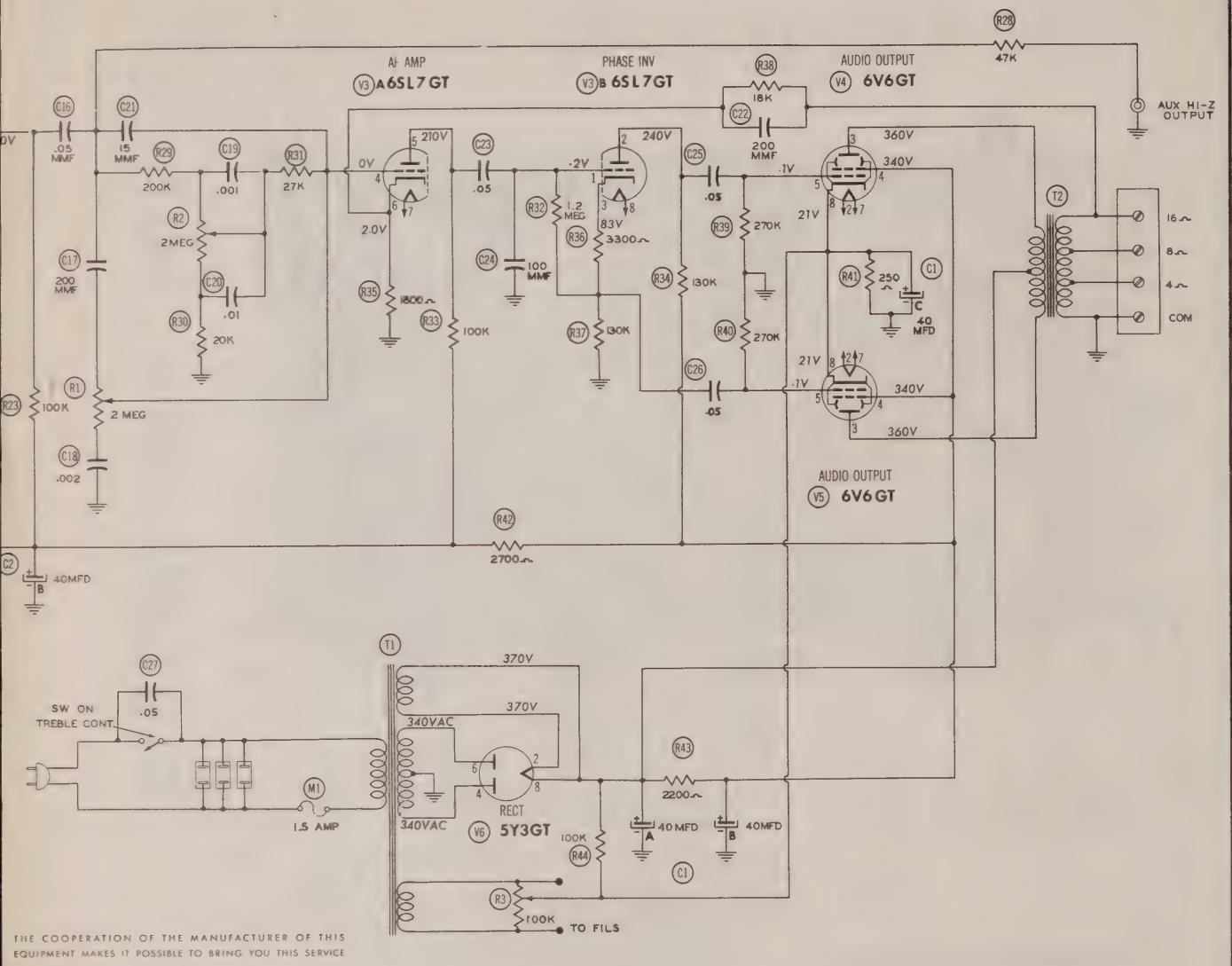
## CHASSIS—BOTTOM VIEW






BELL SOUND MODEL 2199


6SC7
V1
C2
6V6
GT
V5
6V6
GT
V4
5Y3GT
V6
RUMBLE
FILTER
T2
V2
6SL7
C1
V3
6SL7
GT
T1




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6SC7 | 0Ω | †132KΩ | 50KΩ | 1.2Meg | †132KΩ | 1KΩ | 300Ω | 300Ω |
| V 2 | 6SL7GT | 470KΩ | †105KΩ | 1.3KΩ | 0Ω | †205KΩ | 1.6KΩ | 300Ω | 300Ω |
| V 3 | 6SL7GT | 1.3Meg | †135KΩ | 133KΩ | 50KΩ | †105KΩ | 1.8KΩ | 300Ω | 300Ω |
| V 4 | 6V6GT | 0Ω | 300Ω | †2.9KΩ | †2.2KΩ | 270KΩ | 1.8KΩ | 300Ω | 250Ω |
| V 5 | 6V6GT | 0Ω | 300Ω | †2.9KΩ | †2.2KΩ | 270KΩ | INF | 300Ω | 250Ω |
| V 6 | 5Y3GT | INF | 100KΩ | INF | 120Ω | INF | 128Ω | INF | 100KΩ |

† MEASURED FROM PIN 8 OF V6.

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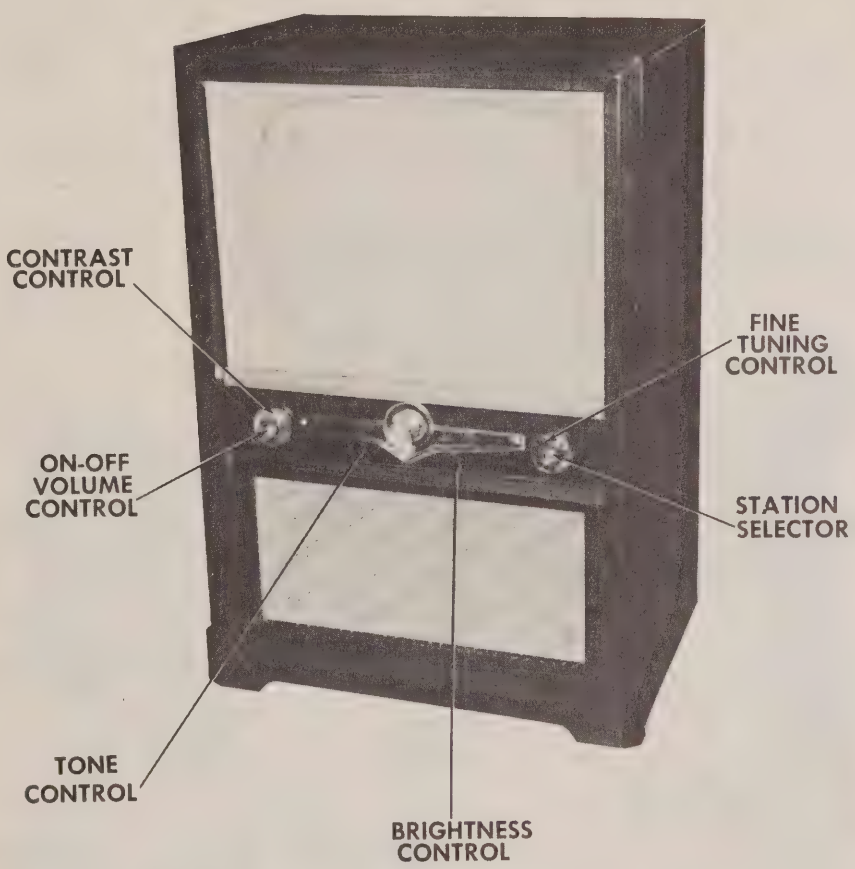


CROSLEY MODEL F-24COLH

| | |
|---|---|
| TRADE NAME | Crosley Models F-24COLH, F-24COLBH (Ch. 411), F-24COLU, F-24COLBU (Ch. 411-1) |
| MANUFACTURER | Crosley Corp., 1329 Arlington St., Cincinnati, Ohio |
| TYPE SET | Television Receiver |
| TUBES | Twenty (Ch. 411), Twenty-one (Ch. 411-1) |
| POWER SUPPLY | 110-120 Volts AC-60 Cycle RATING 1.5 Amp. @ 117 Volts AC |
| TUNING RANGE | Channels 2 thru 13 VHF, 14 thru 83UHF, Video IF 26.4MC, Sound IF 21.9MC (Intercarrier) |

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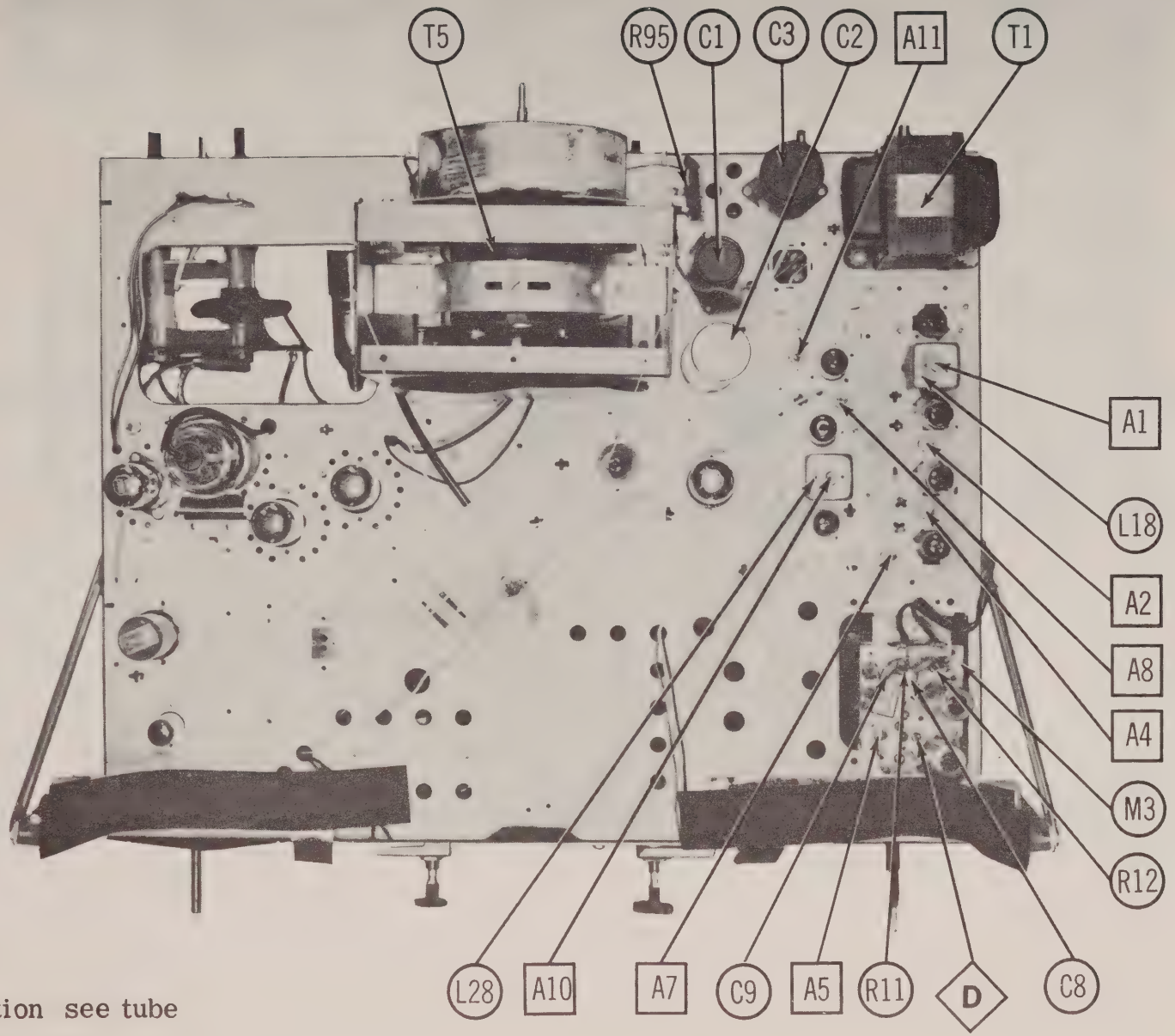


For tube location see tube placement chart page 5.

CHASSIS TOP VIEW

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# TUBE PLACEMENT CHART

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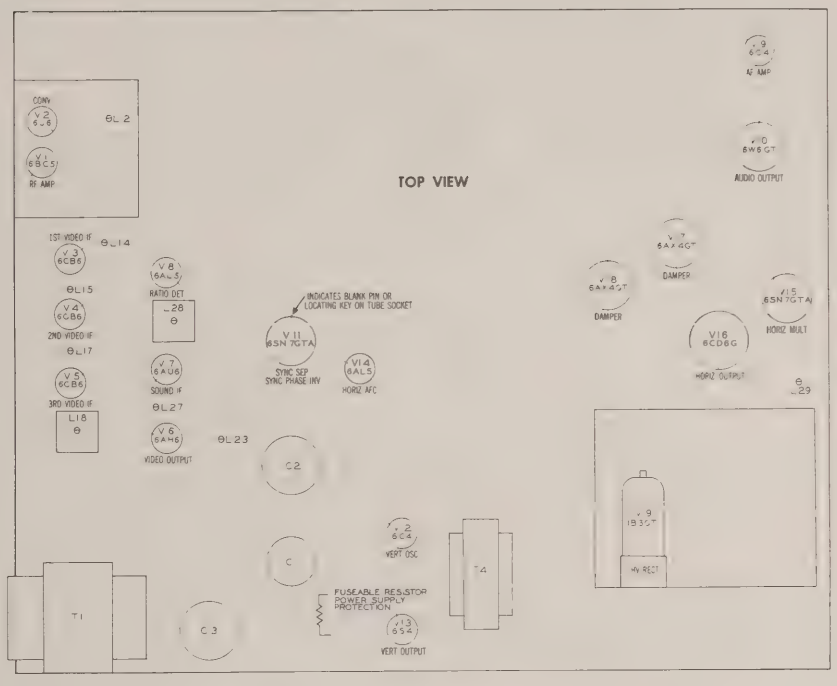


# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifiers (M1 & M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V20
Has pic, no sound - V7, V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12, V13
No horiz. sync - V11, V14, V15
No vert. or horiz. sync - V11

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V19, V20
No vertical deflection - V12, V13
Poor vert. linearity or foldover - V12, V13
Poor horiz. linearity or foldover - V15, V16, V17, V18
Narrow picture - V15, V16, V17, V18, V19, M1, M2
Vert. off freq. - V11, V12, V13
Horiz. off freq. - V11, V14, V15

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator to disable the high voltage. Use an isolation transformer to protect the test equipment.

**VIDEO IF ALIGNMENT**

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt bias supply to the ungrounded side of C41. Connect the positive lead to chassis.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | Direct | High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis. | 24.4MC (Unmod) | Any | DC probe to point (A). Common to chassis. | A1 | Adjust for maximum deflection. Attenuate signal generator to maintain 2 volts at VTVM. |
| 2. | " | " | 22.9MC | " | " | A2 | " |
| 3. | " | " | 21.9MC | " | " | A3 | Adjust for MINIMUM deflection. Repeat steps 2 & 3. |
| 4. | " | " | 25.5MC | " | " | A4 | Adjust for maximum deflection. Attenuate signal generator fo maintain 2 volts at VTVM. |
| 5. | " | " | 24.4MC | " | " | A5 | Connect a 100Ω resistor in series with 1000MMF cap. across L14. Adjust for maximum deflection maintaining 2 volts at VTVM. Remove 100Ω resistor and 1000MMF cap. |
| 6. | " | " | 27.9MC | " | " | A6 | Adjust for MINIMUM deflection. |
| 7. | " | " | 25.5MC | " | " | A7 | Connect a 100Ω resistor in series with 1000MMF from point (D) to chassis. Adjust A7 for maximum deflection maintaining 2 volts at VTVM. Remove 100Ω resistor and 1000MMF capacitor . Repeat steps 6 & 7. |

**OVERALL VIDEO IF RESPONSE CHECK**

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 8. | Direct | High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis. | 24MC (10MC Swp) | 21.2MC<br>21.9MC<br>26.4MC<br>27.9MC<br>28.5MC | Any | Vert. Amp. to point (A) . Low side to chassis. | | Check for response curve similar to Fig.1. If necessary retouch A1, A2, A4, A5 and A7 for desired response. |

**SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM**

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 9. | .001MFD | High side to point (A) . Low side to chassis. | 4.5MC (Unmod.) | Any | DC probe to point (B) . Common to chassis. | A8, A9 | Adjust for maximum deflection. Attenuate signal generator to maintain 4 volts at VTVM. |
| 10. | " | " | " | " | DC probe to point (C) . Common to chassis. | A10 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

**SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE**

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 9. | .001MFD | High side to point (A) . Low side to chassis. | 4.5MC (450KC Swp) | 4.5MC | Any | Vert. Amp. to point (B) . Low side to chassis. | A8, A9 | Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in Fig. 2. |
| 10. | " | " | " | " | " | Vert. Amp. to point (C) . Low side to chassis. | A10 | Reconnect stabilizer capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines. |

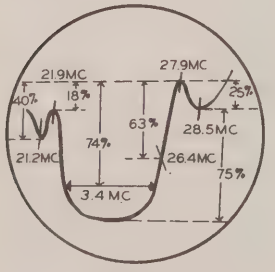

FIG. 1

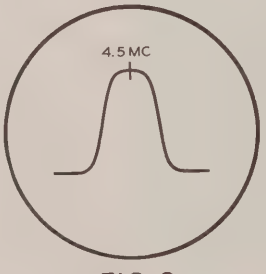

FIG. 2

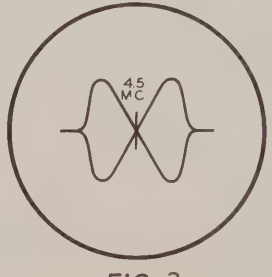

FIG. 3

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# ALIGNMENT INSTRUCTIONS (cont)

4.5MC TRAP ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 11. | .001MFD | High side to point (A). Low side to chassis. | 4.5MC (Unmod.) | Any | DC probe thru detector (Fig.4) to pin 11 of picture tube. Common to chassis. | All | Adjust for MINIMUM deflection. |

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Allow the receiver to warm up for approximately 5 minutes for Channels 7 to 13. Set the station selector switch to the highest channel available in that area. Adjust contrast and volume for normal reception. Set the fine tuning control at the center of its range.
With a non-metallic alignmen tool adjust the slotted head brass screw (A12) located above and to the right of the tuning shaft, for clearest and sharpest detail in the picture.
Check any other channels, 13 to 7 receivable in that area and make slight compromise adjustment of A12 if necessary for best reception of all high band channels.
For low channels set station selector switch to the channel nearest channel 6 and adjust the slotted brass screw (A13) located just below the tuning shaft, for clearest and sharpest detail in the picture.
Check other channels 6 to 2 receivable in that area.

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable.
Alignment of this portion should not be required in the field.

UHF CONVERTER ALIGNMENT

1. Remove the UHF converter from the VHF chassis.
2. Disengage the toggle coupling from the switch throw arm on the front apron of the UHF chassis by
   (a) Turning UHF tuning control clockwise until pin located at rear of drive pulley is free from toggle coupling.
   (b) Loosen two set screws in throw arm collar and remove from switch shaft.
   (c) Turn switch clockwise to UHF position, connect blade on switch rotor must contact and center on the two switch fingers having the red wires attached. Leave switch in this position during alignment.
3. Connect UHF converter output lead to VHF input terminals.
4. Reconnect B- and filament leads to the points from which they were removed on the VHF receiver.
5. Mount UHF converter at right angles to the TV chassis with one mounting screw.
6. Switch VHF tuner to channel 6.

UHF OSCILLATOR ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 12. | See Fig.5 | Across UHF antenna terminals thru antenna matching network (Fig. 5) | 460MC (Unmod) | Set tuner shaft to maximum counter clockwise position | DC probe to point (A). Common to chassis. | A15 | Preset A14 so that flat side of the head is 5/8" above chassis, then adjust A15 for maximum deflection. |
| 13. | " | " | 904MC (Unmod) | Set tuner shaft to maximum clockwise position | " | A16 | Adjust A16 up or down for maximum deflection. Repeat steps 12 and 13. |

UHF RF ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 14. | See Fig.5 | Across UHF antenna terminals thru antenna matching network (Fig. 5) | 460MC (Unmod) | Set tuner shaft to maximum counter clockwise position. | DC probe to point (A). Common to chassis. | A14, A17 | Adjust for maximum deflection. |
| 15. | " | " | 904MC (Unmod) | Set tuner shaft to maximum clockwise position | " | A18, A19 | Adjust for maximum deflection by compressing or expanding coil loop. Repeat steps 14 and 15. |
| 16. | " | " | " | " | " | A20 | Adjust for maximum deflection. |

REASSEMBLE AND CHECK UHF CONVERTER

Re-engage the toggle coupler in the pin on switch throw arm and pin on drive pulley as follows:
1. Turn tuning control shaft clockwise until pin on rear of drive pulley is toward base of chassis.
2. Rotate tuning shaft counter clockwise and guide pin on rear of drive pulley into fork of toggle coupling, then continue to turn shaft counter clockwise to stop. The coupling is now in proper operating position.
3. With switch set in counter clockwise positinn (VHF) replace switch throw arm so that pin on arm engages toggle coupling fork. In this position it is approximately 30 degrees clockwise from horizontal. Tighten set screws in switch throw arm collar.
4. Check function switch for proper operation under conditions of customer use. With tuning shaft fully counter clockwise, all VHF position contacts must be fully made and all UHF contacts fully broken. When tuner shaft is 7½ degrees or more from full counter clockwise position all UHF position contacts must be fully made and all VHF contacts fully broken.

Replace UHF converter on receiver chassis.

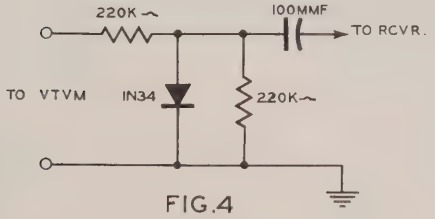


FIG.4

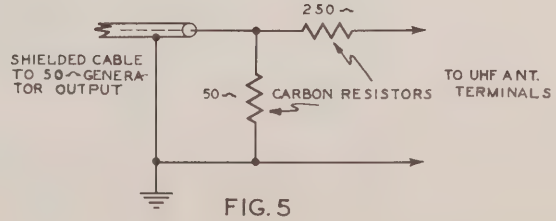
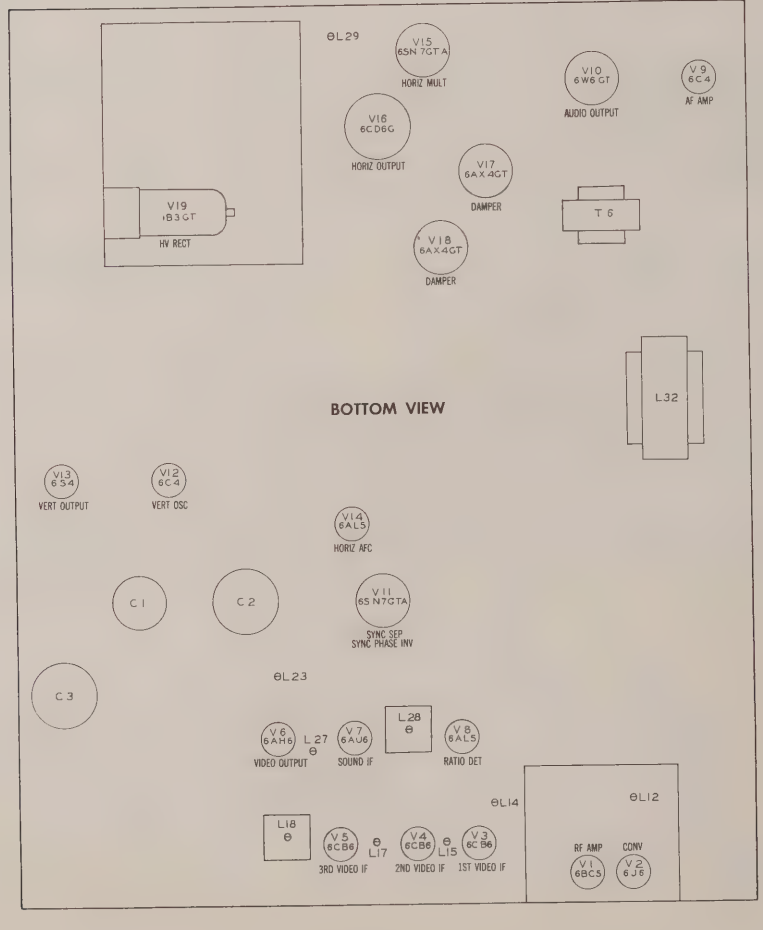


FIG. 5

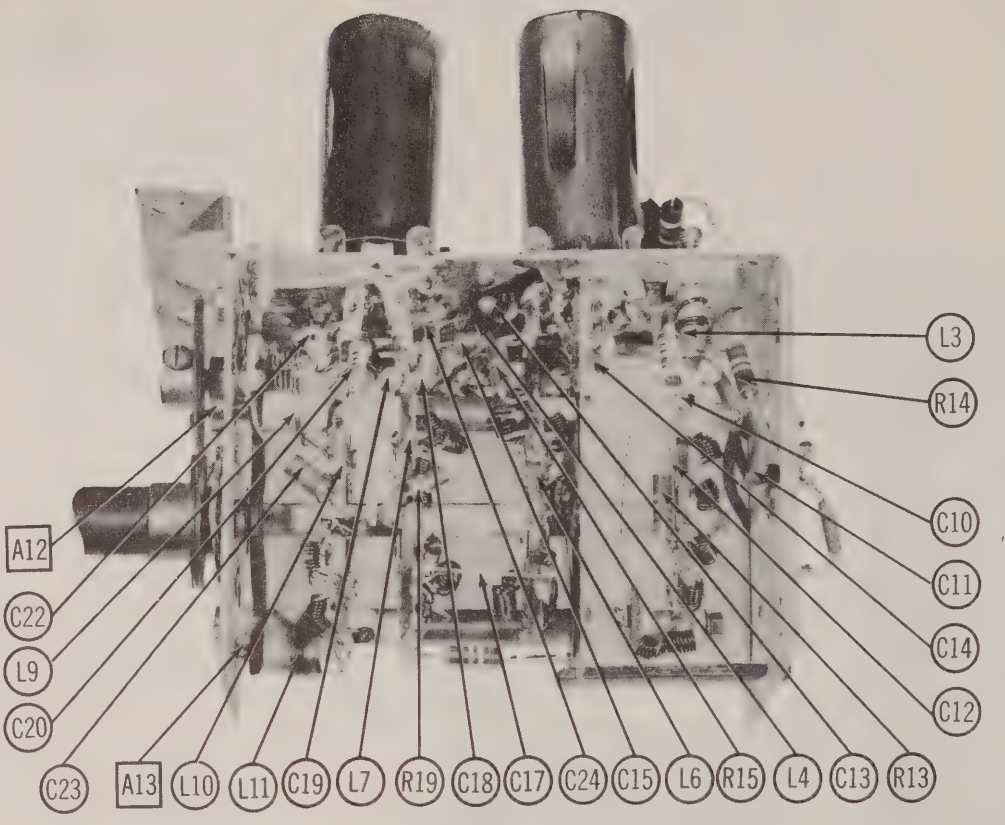
# RESISTANCE MEASUREMENTS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BC5 | 2. 2Meg | 0Ω | 0Ω | . 1Ω | ♦700Ω | ♦2. 9KΩ | 0Ω | | |
| V 2 | 6J8 | ♦10. 7KΩ | ♦3. 5KΩ | 0Ω | . 1Ω | 220KΩ | 15KΩ | 0Ω | | |
| V 3 | 6CB6 | 1. 5Meg | 47Ω | 0Ω | . 1Ω | ♦1KΩ | ♦1KΩ | 0Ω | | |
| V 4 | 6CB6 | 1. 5Meg | 68Ω | 0Ω | . 1Ω | ♦1KΩ | ♦1KΩ | 0Ω | | |
| V 5 | 6CB6 | . 4Ω | 150Ω | 0Ω | . 1Ω | ♦1KΩ | ♦1KΩ | 0Ω | | |
| V 6 | 6AH6 | 1Meg | 180Ω | 0Ω | . 1Ω | † 4. 8KΩ | † 33KΩ | 180Ω | | |
| V 7 | 6AU6 | 1Ω | 0Ω | . 1Ω | 0Ω | ♦2. 2KΩ | ♦2. 2KΩ | 150Ω | | |
| V 8 | 6AL5 | 10KΩ | 10KΩ | . 1Ω | 0Ω | INF | 0Ω | INF | | |
| V 9 | 6C4 | † 33K | INF | 0Ω | . 1Ω | † 33KΩ | 40Ω | 1. 5KΩ | | |
| V 10 | 6W6GT | INF | . 1Ω | † 225Ω | † 25Ω | † 33KΩ | INF | 0Ω | 70KΩ | |
| V 11 | 6SN7GT | 2. 2Meg | ♦ 1Meg | 0Ω | 47KΩ | ♦6. 6KΩ | 2. 7KΩ | . 1Ω | 0Ω | |
| V 12 | 6C4 | ¶ 2. 5Meg | INF | . 1Ω | 0Ω | ¶ 2. 5Meg | 750KΩ | 0Ω | | |
| V 13 | 6S4 | INF | 1. 5KΩ | 2. 2Meg | . 1Ω | 0Ω | 2. 2Meg | INF | INF | ¶ 3KΩ |
| V 14 | 6AL5 | 4. 8Meg | 4. 8Meg | 0Ω | . 1Ω | 22KΩ | 0Ω | 22KΩ | | |
| V 15 | 6SN7GT | 130KΩ | † 68KΩ | 1. 2KΩ | 9. 5Meg | † 10. 4KΩ | 1. 2KΩ | . 1Ω | 0Ω | |
| V 16 | 6CD6G | INF | 0Ω | 0Ω | 1 Meg | 1 Meg | † 4. 8KΩ | . 1Ω | † 9. 3KΩ | TOP CAP ¶63Ω |
| V 17 | 6AX4GT | INF | ¶ 2Ω | 500KΩ | INF | † 25Ω | ¶ 15Ω | 0Ω | . 1Ω | |
| V 18 | 6AX4GT | INF | INF | 500KΩ | INF | † 25Ω | † 7. 5KΩ | . 1Ω | 0Ω | |
| V 19 | 1B3GT | | | PINS 1-8 HAVE INF. RESISTANCE | | | | | | TOP CAP ¶ 413Ω |
| V 20 | 24CP4 | 0V | 820KΩ | PIN 10 ¶ 220KΩ | PIN 11 ♦ 240KΩ | PIN 12 . 1Ω | | | | |

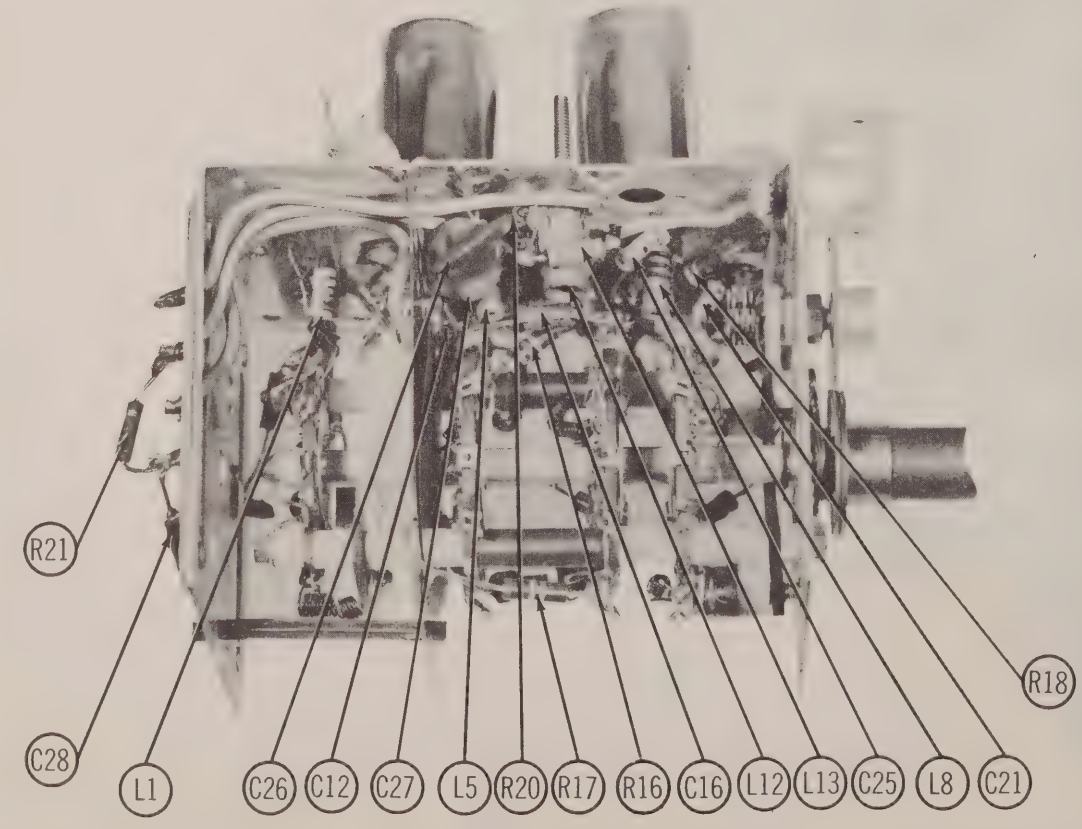
♦ MEASURED FROM PIN 8 OF V10.
¶ MEASURED FROM PIN 3 OF V17.
† MEASURED FROM OUTPUT OF M2.




# TUBE PLACEMENT CHART

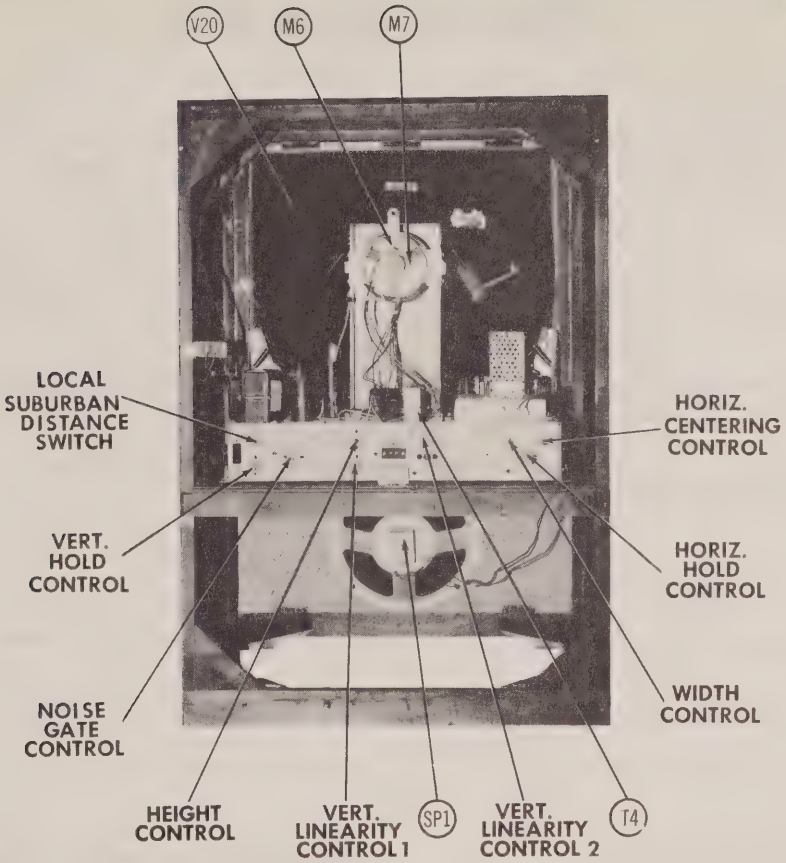



**RF TUNER-RIGHT SIDE**




**RF TUNER-LEFT SIDE**

PROPERTY OF
L. T. CLARKENSHIP
3824 MEADE ST.
DENVER, COLORADO




## CABINET—REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Connect DC probe of VTVM to junction of R69 and R70 (near V14 tube socket). Connect common lead to chassis.
2. Short pin 7 of V14 to chassis and adjust VTVM to zero.
3. Remove short from pin 7 of V14. Do not readjust VTVM.
4. Connect a .1MFD 600 volt capacitor from the junction of horizontal oscillator coil L29 and R77 to chassis.
5. Adjust horizontal hold control for zero on VTVM.
6. Remove the .1MFD capacitor from C29 and R77. Do not readjust horizontal hold control.
7. Adjust the horizontal oscillator slug (B1) for zero on VTVM. Remove VTVM and check pull in range of horizontal hold which should be effective for approximately 50 degree rotation.

Adjust the width slug for a picture slightly wider than necessary to fill the picture mask horizontally.

## DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood screws. Remove rear cover.
3. Disconnect built-in antenna and speaker.
4. Remove 1 wood screw. Remove antenna bracket.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

# TROUBLE SHOOTING AIDS

## SWEEP

### HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V15, V16, V17 and V18. Check adjustment B2. Check waveform W13.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check C86, R87, R88, T3, T5A and other associated components. | Check C81, C83, C85, C82, C84, R83, R85, R76, R77, R79 and other associated components. |

DRIVE LINES

Check by substitution V15, V16, V17 and V18. Check T3, T5A, C2D, C4, C81 C83, C85 and other associated circuit components.

COMPRESSED LEFT SIDE

Check adjustment B2. Check by substitution V16, V17 and V18. Check components associated with the horizontal output and damper stages.

FOLDS

Follow procedure outlined under "Drive Lines."

XMAS TREE EFFECT

Substitute V15. Check L29, C81, C82 and other components associated with V15.

### VERTICAL

LOSS OF SWEEP

Check by substitution V12 and V13. Check waveform W7.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T4 and T5B. | Check C65, C66, C69, T2 and other associated components. |

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Substitute V12 and V13. Check T4, T5B, C2D and other associated circuit components.

COMPRESSED AT TOP

Check by substitution V12 and V13. Check C66, C69, R62, R63 and other associated components.

FOLDS"

Substitute V12 and V13. Check components associated with these stages for failure or change of value.

## SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Substitute V11. Check components associated with V11 especially C59, C61, R53 and R56.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V11 and V12. Check waveform W5.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check components associated with V12. | Check C62, C63, C64, R60 and R61. |

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Substitute V14 and V15. Check waveform W10.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check AFC network and other components associated with V15. | Check C72, C73, R69, R70 and other associated components. |

HORIZONTAL BENDING

Check by substitution V15 and V16. Check Horizontal AFC filter network (C76, C77, C78, R72 and R73) for component failure or change of value.

## VIDEO

LOSS OF VIDEO

Check R41, R3, L26, C46, picture tube and other associated components.

SOUND BARS (4.5MC BEAT)

Check setting of fine tuning. Check adjustment A11. Check video IF alignment.

NEGATIVE PIX

Check setting of Local Suburban Distance switch. Check V6. Check video detector crystal and assembly. Check picture tube and other associated circuit components.

POOR CONTRAST-(STRONG SIGNAL AREAS)

Check V2, V3, V4, V5 and V6. Check video detector crystal and assembly. Check picture tube and other associated components.

SMEAR

Substitute V6. Check video detector crystal and assembly. Check C43, C46, R37, R38, R39, R41, L22, L24, L25, picture tube and other associated components for failure or change of value.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5, and V6 for heater to cathode leakage.

## AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8, V9 and V10. Check stages of V9 and V10 using audio signal generator. Apply audio signal across R1B.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check ratio detector and audio IF alignment and components. | Check components associated with V9 and V10. |

BUZZ

Adjust A10 for minimum buzz. If buzz is still objectionable substitute V8 and realign audio section. Follow procedure outlined in the alignment section.

DISTORTED

See "Weak or No sound".

PROPERTY OF
L. F BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO



# UHF TUNER SCHEMATIC




UHF CONVERTER USED ON TV CHASSIS 411-1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (cont)

| ITEM No. | USE | DC RES. PRI. | DC RES. SEC. | REPLACEMENT DATA CROSLEY PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L21 | Shunt. Peak. Coil | 15Ω | | 156036 | 19-3500 | TV-188 | 6174 | 464 Microhenries |
| L22 | Series Peak. Coil | 15Ω | 154194 | 154194 | 19-4412 | TV-188 ■ | 4648 ■ | 412 Microhenries; wound on 8.2KΩ resistor. |
| L23 | 4.5MC trap | 2.7Ω | | 155446 | 20-1004 | TV-151 | 1470 | |
| L24 | Shunt. Peak. Coil | 6Ω | | 154206 | 19-4121 | TV-181 * | 4642 * | 106 Microhenries; wound on 6.8KΩ resistor. |
| L25 | Shunt Peak. Coil | 20Ω | | 154176 | 19-4840 | | | 840 Microhenries; wound on 3.3KΩ resistor. |
| L26 | Series Peak. Coil | 6.5Ω | | 156035 | 19-3125 | | 6153 | 117 Microhenries |
| L27 | Sound IF | .9Ω | | 155442 | 17-3400 | TV-151 | 1469 | |
| L28 | Ratio Det. | 3.7Ω | .6ΩCT | 154108 | 17-1033 | TV-110 | 1468 | Tertiary winding=.4Ω |
| L29 | Horiz. Osc. | 95Ω | | 154220 | 19-1576 | TV-163 | 6210 | |
| L30 | RF Choke | 2Ω | | 156575 | | | 4624 † | 16 Microhenries; wound on 180Ω resistor. |
| L31 | Anti-Ringing Coil | 23Ω | | 155944 | | | 6306 ▲ | 10 Microhenries; wound on .1MMF capacitor. |

* Parallel with 6.8KΩ resistor.
† Parallel with 180Ω resistor.
▲ Parallel with .1MMF capacitor.
■ Parallel with 8.2K resistor.

## FILTER CHOKE

| ITEM No. | RATINGS TOTAL DIRECT CURRENT | RATINGS D.C. RESISTANCE | RATINGS INDUCTANCE (0 CURRENT 1000 ~) | REPLACEMENT DATA CROSLEY PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. |
|---|---|---|---|---|---|---|---|---|
| L32 | .240ADC | 28Ω | 1.2 Hy. | 156005-1 | C-2328 ① | | TR-1325 | C-23X |

## SELENIUM RECTIFIER

| ITEM No. | RATING CURRENT | REPLACEMENT DATA CROSLEY PART No. | SELETRON PART No. | FEDERAL PART No. | MALLORY PART No. | SARKES TARZIAN PART No. | NOTES |
|---|---|---|---|---|---|---|---|
| M1 | .240ADC | 155575-1 | NH5 | 6Q4 | 1187A | 6S300 | 350A |
| M2 | .240ADC | 155575-1 | NH5 | 6Q4 | 1187A | 6S300 | 350A |

## MISCELLANEOUS

| ITEM No. | PART NAME | CROSLEY PART No. | NOTES |
|---|---|---|---|
| M3 | Tuner | 155398 | VHF Complete |
| M4 | Crystal | 154111 | 1N64 Video Detector |
| M5 | Switch | 155554 | Local - Suburban - Distance |
| M6 | Focus Magnet | 155788-2 | Includes centering lever & focus cable |
| M7 | Ion Trap | 155109-4 | |
| M8 | Tuner | 156871 | UHF Converter - Models F-24COLU & F-24COLBU |
| M9 | Inductuner | 155158-1 | Part of converter |
| M10 | Crystal | 151871 | Part of converter |
| M11 | Switch | 156170 | UHF-VHF function - rotary - used with UHF Models only |
| | Cabinet | 155962-1 | Mahogany - Models F-24COLH & F-24COLU |
| | Cabinet | 155962-2 | Blond - Models F-24COLBH & F-24COLBU |
| | Knob | 154214-1 | Fine tuning - Mohogany Cabinets |
| | Knob | 154214-2 | Fine tuning - Blond cabinets |
| | Knob | 154216-1 | Contrast - Mahogany cabinets |
| | Knob | 154216-2 | Contrast - Blond cabinets |
| | Knob | 154265 | Local-distance - All Models |
| | Knob | 154270 | (2) Horizontal & vertical hold - All Models |
| | Knob | 155513-1 | (2) Tone & brightness - Mahogany cabinets |
| | Knob | 155513-2 | (2) Tone & brightness - Blonde cabinets |
| | Knob | 156209-1 | Volume - Mahogany |
| | Knob | 156209-2 | Volume - Blond |
| | Knob | 156217-1 | Channel Selector VHF - Mahogany |
| | Knob | 156217-2 | Channel Selector VHF - Blond |
| | Knob | 156206-1 | Channel Selector UHF - Mahogany - Model F-24COLU |
| | Knob | 156206-2 | Channel Selector UHF - Blond - Model F-24COLBU |
| | Safety Glass | 155350-8 | All Models |
| | Mask | 155938-1 | All Models |
| | Back Cover | 156956 | All Models - includes power cable assy. |

# TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

## POWER

**DEAD SET**

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, check M1, M2 and B+ filter and decoupling components.

**SMALL AND/OR DIM PIX**

Measure B+. If unsatisfactory, check M1, M2 and other B+ filter and decoupling components. If satisfactory, see "Horizontal", Insufficient Sweep".

## HIGH VOLTAGE

**LOSS OF HIGH VOLTAGE**

Check by substitution V15, V16, V17, V18 and V19. Check waveform W13.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check R93, T3, T5A and other associated components. | Check C81, C83, C85 and other associated circuit components. |

**INSUFFICIENT HIGH VOLTAGE**

Check by substitution V19, V18, V17, V16 and V15. Measure B+.

| If Satisfactory | If Unsatisfactory |
|---|---|
| See "Loss of High Voltage". | See Small and/or Dim PIX. |

**BLOOMING**

Check by substitution V19, V18, V17 and V16. Check R93, T3, T5A, picture tube and other associated components.

## GENERAL

**RASTER SOUND NO PIX**

See" Loss of Video".

**RASTER NO SOUND NO PIX**

Check by substitution V1, V2, V3, V4, V5 and V6. Check components associated with these stages.

**NO RASTER NO SOUND**

See "Dead Set".

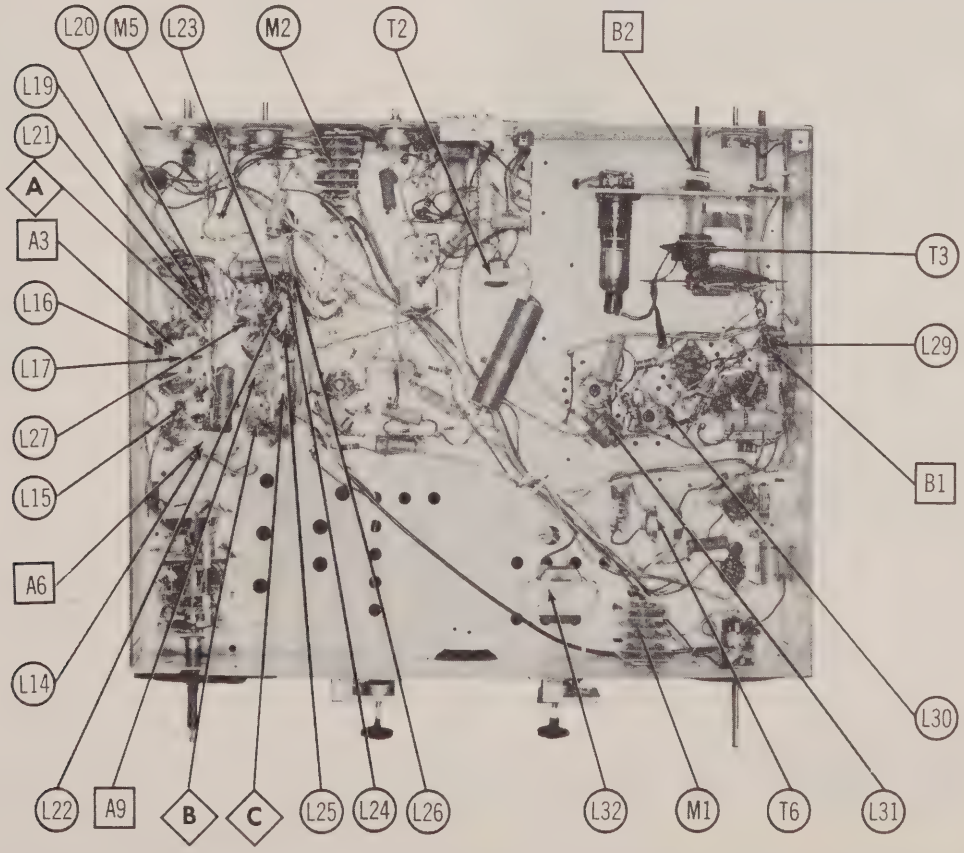
**INTERMITTENT STREAKS**

Check high voltage section for corona discharge and arcing.

**UNSTABLE PICTURE**

Check adjustment of noise gate control. See"Sync"section.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.




## CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

# SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

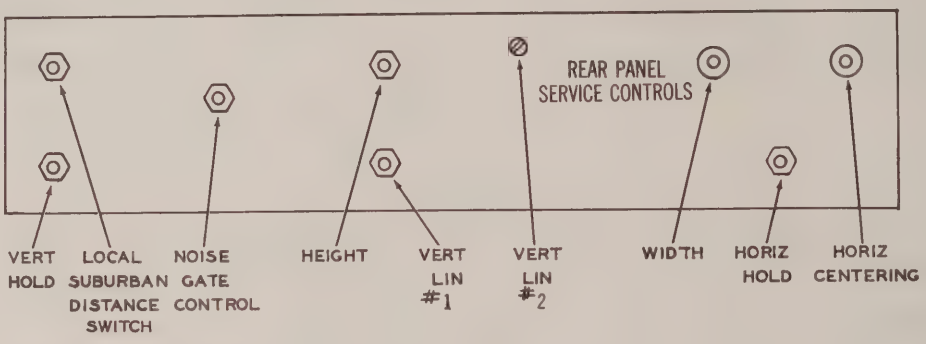
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 2 screws holding metal strip at bottom of safety glass. Remove metal strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION




HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

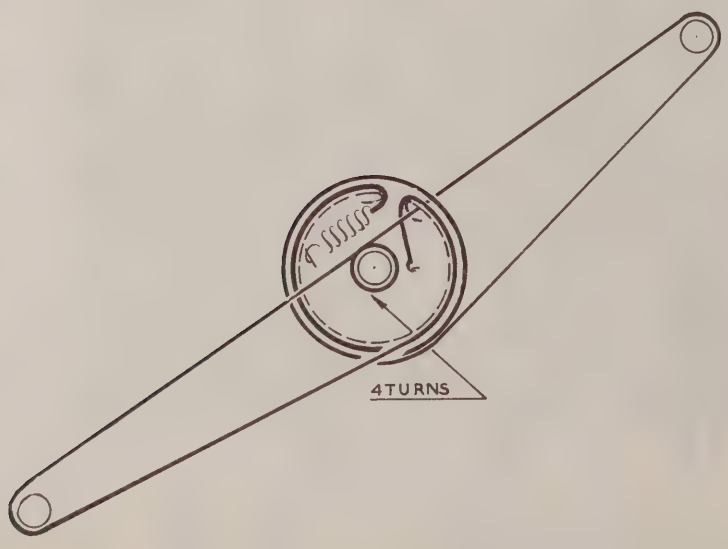
For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal oscillator slug (L29) until picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

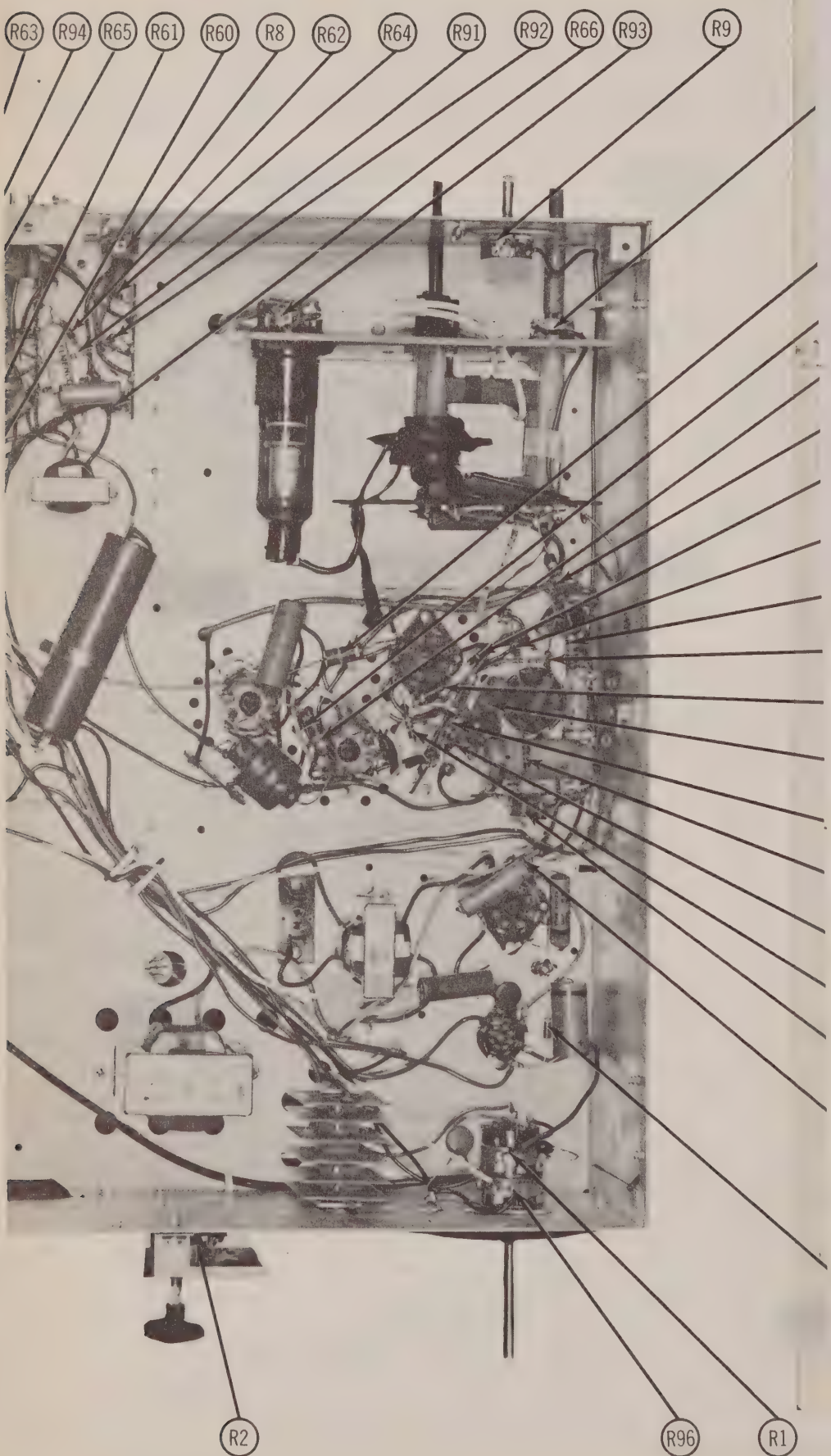
To eliminate Sound IF detector buzz, adjust the ratio detector secondary (L28) located on top of chassis. (See tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.




# UHF DRIVE CORD STRINGING

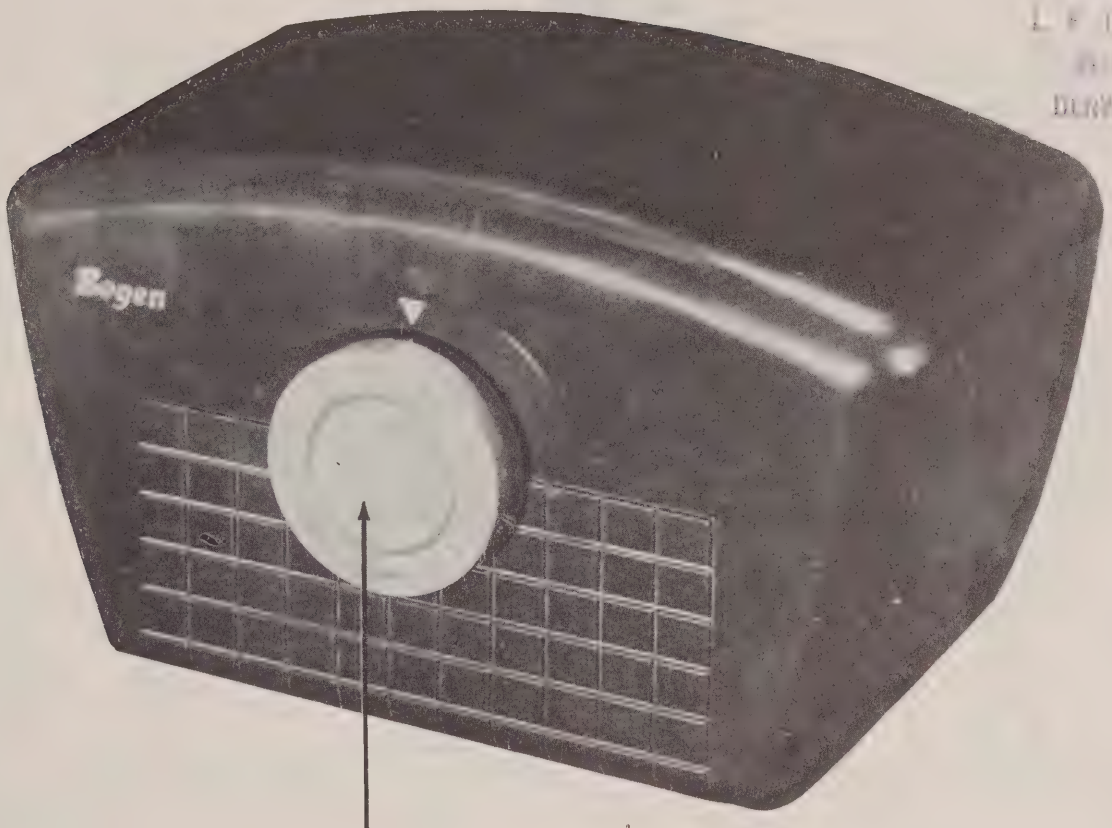



## ESISTOR IDENTIFICATION

# DAVID BOGEN
# MODEL BB-1A (TV BOOSTER)

PROPERTY OF
L. F. [illegible]
DENVER, [illegible]

DAVID BOGEN
MODEL BB-1A (TV BOOSTER)




TUNING CONTROL
ON-OFF SWITCH

DAVID BOGEN
MODEL BB-1A (TV BOOSTER)

| | |
|---|---|
| TRADE NAME | David Bogen Model BB-1A |
| MANUFACTURER | David Bogen Co., Inc., 29 Ninth Ave., New York, N.Y. |
| TYPE SET | AC Operated 12 Channel VHF Television Booster Amplifier |
| TUBES (Two) | Types 6J6 RF Amplifier |
| POWER SUPPLY | 110-120 Volts AC RATING .09 Amp. @ 117 Volts |

THIS EQUIPMENT HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT IN THE FIELD SHOULD NOT BE REQUIRED.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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# PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL BB-1A

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | David Bogen PART No. | STANDARD REPLACEMENT | | |
| V1 | RF Amplifier | 6J6 | 6J6 | 7BF | |
| V2 | RF Amplifier | 6J6 | 6J6 | 7BF | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | David Bogen PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1 | 30 | 150 | | AFH1-28 | | A018 | | FP113 | | |
| C2 | 56 | 500 | | | | | | | | |
| C3 | 56 | 500 | | | | | | | | |
| C4 | 1.2 | | | | | | | | | |
| C5 | 1.2 | | | | | | | | | |
| C6 | 2.7 | | | | | | | | | |
| C7 | 1.2 | | | | | | | | | |
| C8 | 1.2 | | | | | | | | | |
| C9 | 2.4 | | | | | | | | | |
| C10 | 56 | 500 | | | | | | | | |
| C11 | 56 | 500 | | | | | | | | |
| C12 | .047 | 400 | | P488-047 | | PTE4S47 | | PT4147 | 4TM-S47 | |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | David Bogen PART No. | IRC PART No. | |
| R1 | 4700Ω | 1/2 | | BTS-4700 | |
| R2 | 4700Ω | 1/2 | | BTS-4700 | |
| R3 | 47Ω | 1/2 | | BTS-47 | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | David Bogen PART No. | IRC PART No. | |
| R4 | 47Ω | 1/2 | | BTS-47 | |
| R5 | 470Ω | 1/2 | | BTS-470 | |
| R6 | 470Ω | 1/2 | | BTS-470 | |

## TRANSFORMER (POWER)

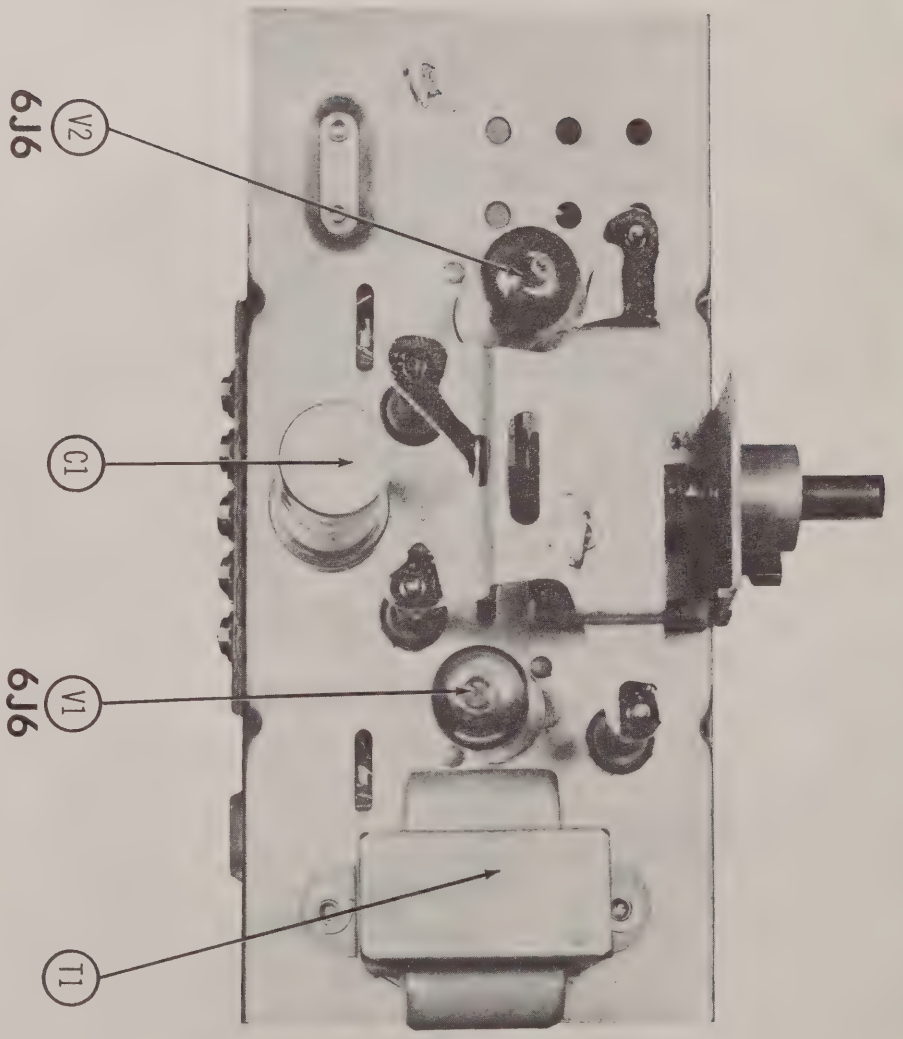
| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | David Bogen PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| T1 | 117VAC @ .09A | 130VAC .006A Tap @ 6.3VAC @ .47A | | | | PS-8415① | P-3046 | | R-54X | |

① Connect secondaries in series.

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | David Bogen PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Input Booster Coil | 0Ω | | H-316B | | | | Low Band (Channels 2-6) |
| L2 | Ant. Input Booster Coil | 0Ω | | H-315B | | | | High Band (Channels 7-13) |
| L3 | Output Booster Coil | 0Ω | | H-316A | | | | Low Band |
| L4 | Output Booster Coil | 0Ω | | H-315A | | | | High Band |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

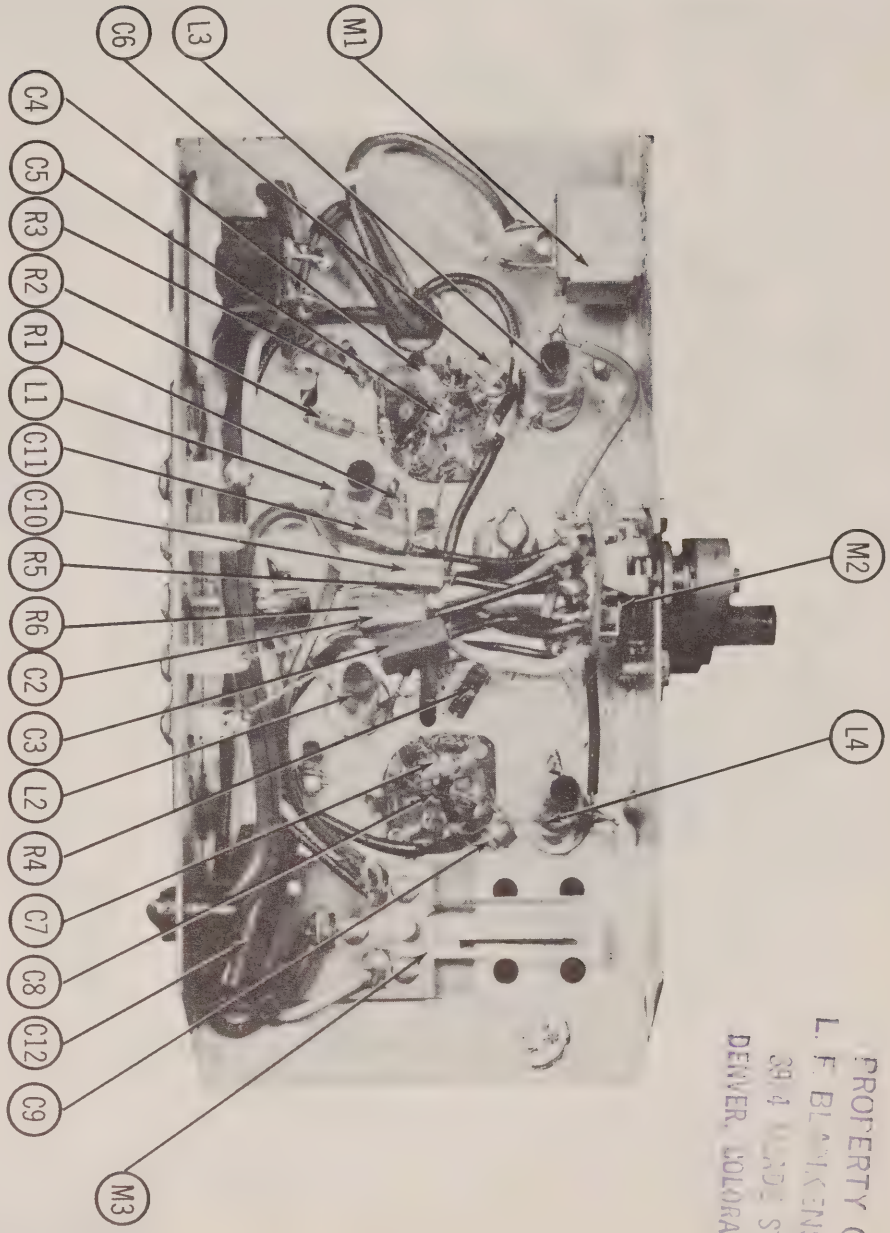
## SELENIUM RECTIFIER

| ITEM No. | RATING | REPLACEMENT DATA | | | | |
|---|---|---|---|---|---|---|
| | CURRENT | David Bogen PART No. | SELETRON PART No. | FEDERAL PART No. | MALLORY PART No. | SARKES TARZIAN PART No. |
| M1 | .006 Amp. | | 8Y1 | | 8535 | 35 |

## MISCELLANEOUS

| ITEM No. | PART NAME | David Bogen PART No. | NOTES |
|---|---|---|---|
| M2 | Switch | | Off-on channel selector (rotary wafer) |
| M3 | Switch | | Thernal relay |

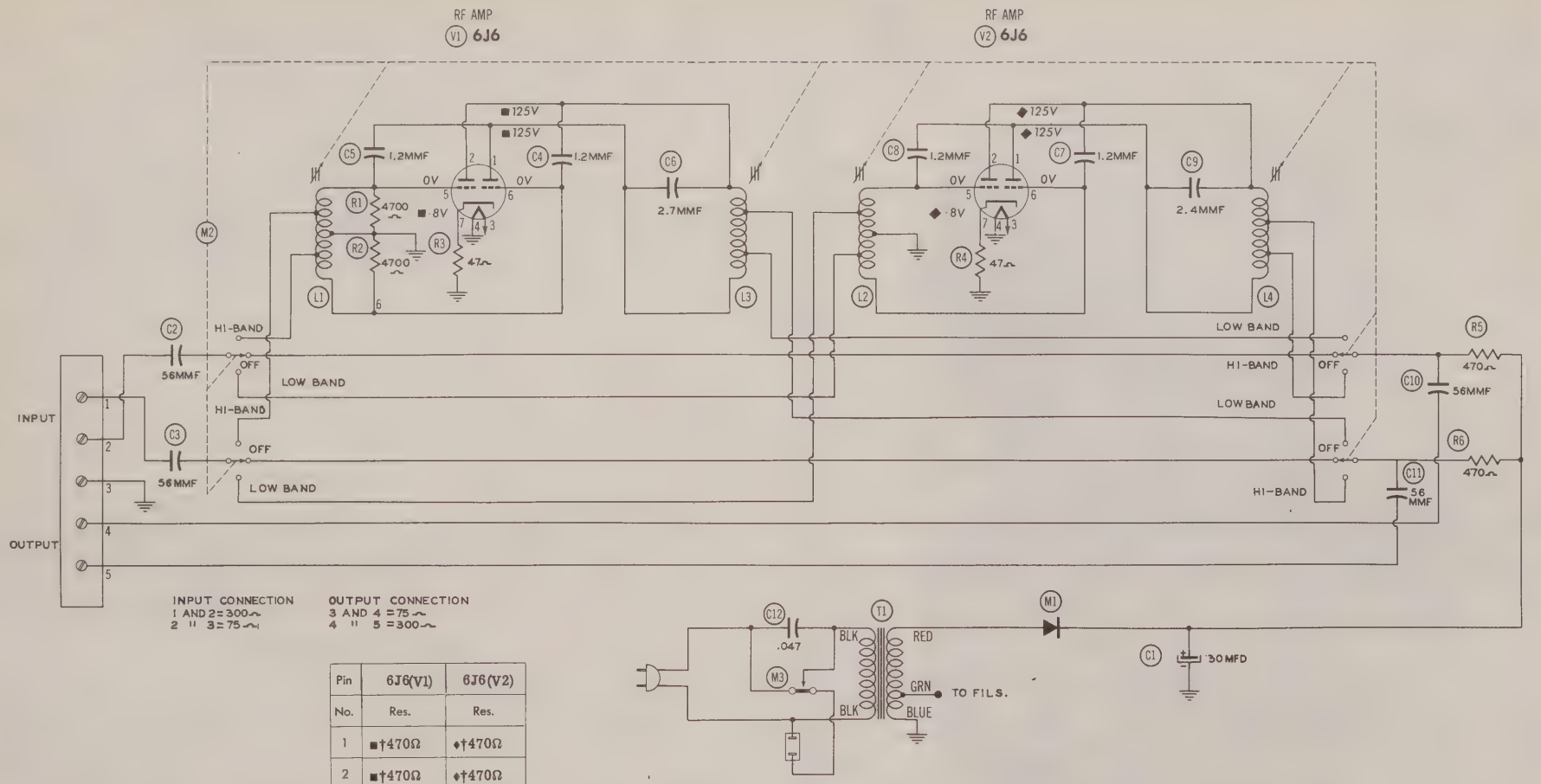
# CHASSIS—BOTTOM VIEW




PROPERTY OF
L. F. BLANKENSHIP
394 [illegible] ST.
DENVER, COLORADO

DAVID BOGEN
MODEL BB-1A

DAVID BOGEN
MODEL BB-1A




| Pin No. | 6J6(V1) Res. | 6J6(V2) Res. |
|---|---|---|
| 1 | ■†470Ω | ♦†470Ω |
| 2 | ■†470Ω | ♦†470Ω |
| 3 | .6Ω | .6Ω |
| 4 | 0Ω | 0Ω |
| 5 | 4.7KΩ | 4.7KΩ |
| 6 | 4.7KΩ | 4.7KΩ |
| 7 | 47Ω | 47Ω |

■ READINGS TAKEN IN "LOW" POSITION
♦ READINGS TAKEN IN "HIGH" POSITION
† MEASURED FROM OUTPUT OF M1

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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228-7

1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

PROPERTY OF
L. F. BLANKENSHIP
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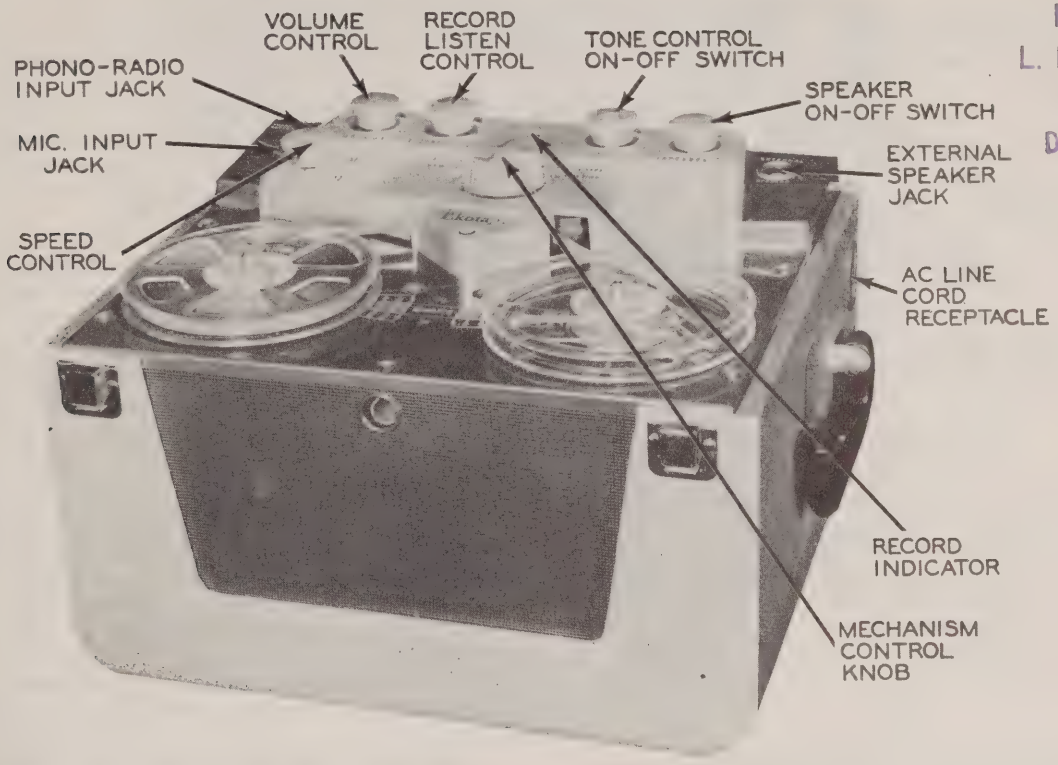


Figure 1

## GENERAL INFORMATION

The Webster Electric Ekotape Recorder Models 205 and 206 are essentially alike in basic design and construction. Both are twin-track, two speed-models, operating at tape speeds of either 3 3/4 or 7 1/2 inches per-second. Both models are portable. The accessories are interchangeable between the two models. Both models use class A amplification with the same type tubes.

The Ekotape is designed to record and playback two tracks of sound on a standard reel of tape. This allows two full, one hour programs to be recorded on a 7" reel at the 3 3/4" speed. Two half-hour programs may be recorded on a 7" reel at the 7 1/2" speed.

The main difference between Models 205 and 206 lies in the power input application. The Model 205 operates on 117 volts at 60 cycle per second, while the Model 206 operates on 115/230 volts at 50 cycles per second.

CAUTION: Severe damage may result if connection is made to a direct current (DC) line. Check serial nameplate for proper current and voltage application.

Manufactured by:

Webster Electric Company
Racine, Wisconsin

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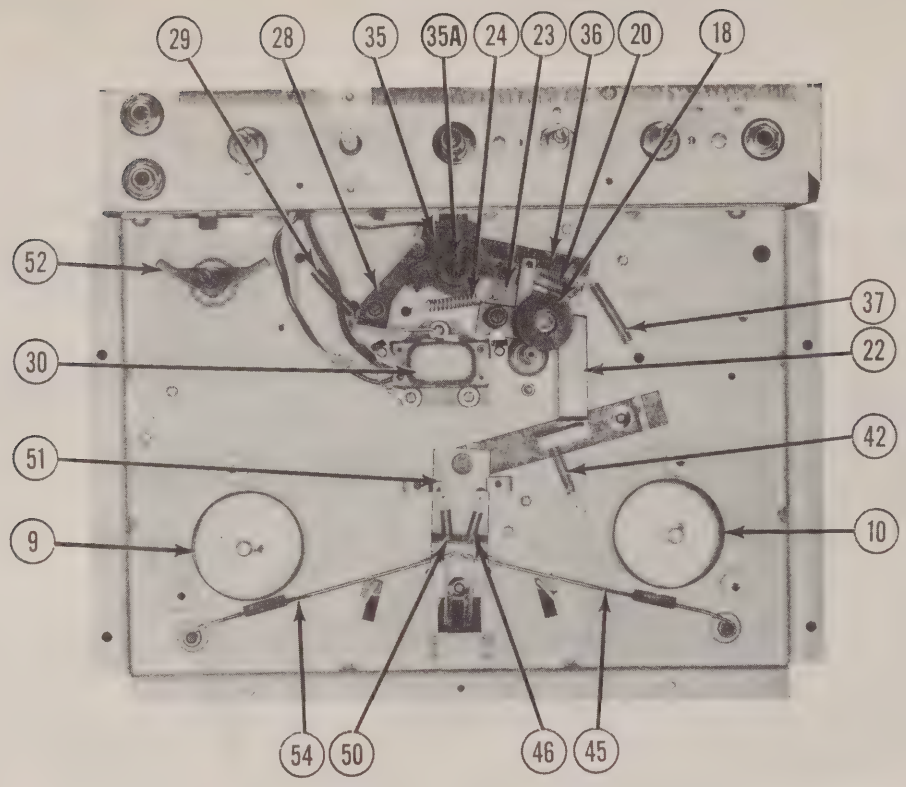


Figure 2

## CONVERTING MODEL 206 FOR 115 VOLT OPERATION

Model 206 employs a large power transformer, with a primary tapped for selection of 115 or 230 volts. This model is shipped for 230 volt operation. To convert from 230 to 115 volt operation, proceed as follows:

Remove the short between the two center terminals, as shown on the schematic diagram, and solder a jumper wire from terminal with a black lead to terminal with a red lead. Solder a jumper from terminal with a green lead to terminal with a white lead. After making change of voltage operation, mark the nameplate in the cover of the carrying case for future reference.

## OPERATING INSTRUCTIONS

### Preparing The Ekotape For Recording-

1. Insert the AC power cord into the receptacle on the right side of the cabinet.

2. Plug the AC cord into a convenient wall receptacle of the proper rating.

3. Place a reel of tape on the left hand or "supply" spindle (9) in a manner so that the tape will unwind in a clockwise direction.

NOTE: The Ekotape is designed to use Type "A" wound tape, i.e. the dull magnetic coated side faces inward on the reel. If the tape used is Type "B" (coated side facing outward) the recording will be made at a very low sound level and the playback will be almost inaudible.

4. Place an empty reel on the right hand or "take-up" spindle.

5. Unwind approximately 10" of tape and, while holding a section of tape straight with both hands, insert the tape in the tape slot making sure the dull coated side of the tape faces the front of the recorder.

6. Insert the free end of the tape through to the hub of the "take-up" reel, forcing it into one of the three radial slots. While holding the tape in this position, turn the reel several turns (clockwise) until the tape is secured to the reel and all slack is taken up between reels.

### To Make A Recording-

1. After the recording tape has been properly threaded, turn the "On-Off-Tone" control to the "On" position.

2. Turn the mechanism control knob (2) to "Forward".

3. Turn the "Record-Listen" selector knob to the "Record" position.

NOTE: The "Record-Listen" selector knob will stay in the "Record" position only when the mechanism control knob (2) is in the "Forward" position.

4. Turn the "Volume" control clockwise until the incoming signal causes the "Record Indicator" to flicker occasionally. A recording is now being made on the tape.

To Record From Microphone-

1. Insert the microphone plug into the "Mic." jack, located on the left side of the top panel.

2. Follow the instructions under the heading of, "To Make A Recording".

3. Best results will be obtained if the microphone is kept closer to the source of sound than to any walls in the recording area to prevent echos of the sounds as they rebound off the walls.

NOTE: The microphone should be kept at least three feet away from the loudspeaker during recording unless the "Speaker" control knob is in "Off" position.

To Record From Radio Or Television Receiver-

Recordings can be made from a radio or television receiver by placing the microphone near the loudspeaker; however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result may be recorded on the tape. A superior quality recording can be made by use of Radio Cord Attachment accessory (Part No. SS477A). Connect attachment cord as follows:

1. Connect the cord clips across the voice coil terminals on the radio or television speaker.

2. Insert the cord plug into the "Phono-Radio" input jack located on the left side of the top panel.

3. Set the radio or television receiver for soft playing, then operate the Ekotape controls as described under "To Make A Recording".

To Record From Phonograph-

1. Connect the alligator clips of the Radio Cord Attachment to the ends of the pickup leads of the phonograph and then insert the cord plug into the "Radio-Phono" jack. Proceed with the recording as described under "To Make A Recording".

NOTE: Should a hum develope from the above connections, reverse the cord clips on the pickup leads.

To Rewind-

Turn the mechanism control knob (2) counter-clockwise into the "Rewind" position. When the rewinding is completed move the mechanism control knob (2) into "Stop" position and allow the tape to come to a complete stop before moving the mechanism control knob to any other function.

Twin Track Operation-

Models 205 and 206 are twin-track units, which record on approximately half the width of the tape at one time.

1. To record a second program on the same tape, lift the full reel from the right hand spindle, turn it over, and place it on the left hand spindle.

2. Place the empty reel on the right hand spindle; properly thread the tape, and continue your recording as described under "To Make A Recording".

NOTE: Since it is impossible to edit and splice one "track" without affecting the other, recordings which are to be edited should be limited to one track only.

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To Play A Recording-

1. With the tape properly threaded, turn the mechanism control knob (2) to the "Forward" position.

2. Adjust the "Volume" and "Tone" controls to suit.

3. Be sure the speaker "On-Off" switch, located on the right side of the top panel, is in the "On" position.

Fast Forward-

If it is desired to reach a recording near the end of a tape in a few seconds, turn mechanism control knob (2) to the "Fast Forward" position. In the "Fast Forward" position the tape moves ahead approximately 15 times normal listening speed of 3 3/4 or 7 1/2 inches per second. The most rapid fast forward speed is therefore obtained with the speed control set at 7 1/2.

REMOVING UNIT FROM CASE

All service work with the exception of cleaning the head assembly, adjustment or replacement of brake lever assemblies (45 & 54), remote lever assembly (51), pinch roller and lever assemblies (22), (23) and (18), pressure pad assembly (28), will not require removal of unit from the carrying case.

1. To remove the back cover (5) for cleaning of the head remove all control knobs, and remove two screws located under mechanism control knob (2). Move back cover (5) about 1/16 inch toward the front of the unit and lift straight up and off.

2. To remove record head cover (7), remove one attaching screw and lift off.

3. For removal of the top panel assembly (13), follow the above instructions and remove seven screws on panel and two under back cover (5). Lift panel straight up and off.

4. To remove recorder from carrying case, omit paragraph 1, 2 and 3, detach the AC line cord, remove two screws located on each side of the top panel. Carefully lift unit straight up and out, detaching speaker plug from amplifier to completely free unit.

5. When reassembling the unit, reverse the above procedure; plug the speaker plug into the amplifier. Be sure the speaker leads clear all moving parts before lowering into place.

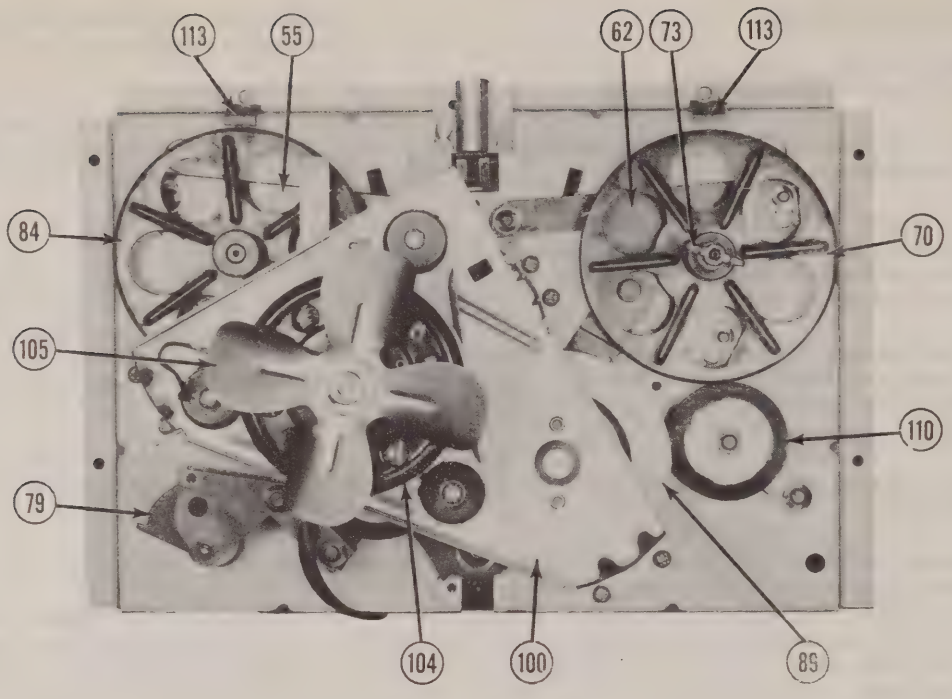


Figure 3

TROUBLES AND REMEDIES

Motor And Amplifier Do Not Operate When Tone Control Switch Is Turned On-

1. Check fuse to see if it has blown.

2. Check to see if power is reaching recorder.

3. Damaged power cord.
   (a) Repair or replace.

4. Damaged "On-Off-Tone" control switch.
   (a) Replace tone control and switch assembly.

Sound Is Fuzzy, Faint, Distorted, Or No Sound-

1. Dirty head.
   (a) Check the record head (30) to see if it is dirty. The recording head is subject to an accumulation of tape coating residue, which is worn off the tape as it passes the head. This should be periodically removed since it may cause faint recordings and poor playback. Wipe off the record and erase head contact surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with carbon tetrachloride.

NOTE: Do not use a brush or excessive amount of solvent on the head surfaces.

2. Over recorded or under recorded tape.
   (a) Correct recording volume is very important. Too weak a signal, which does not cause the record level indicator to flicker, will result in weak playback and high background noise. Too strong a signal, causing the indicator to glow continuously, will result in distortion during playback.

3. Amplifier trouble.

4. Worn or dirty pressure pad. See "Pressure Pad And Lever Adjustments".

5. Pressure pad spring (29) loose or missing.
   (a) The pressure pad lever assembly (28) should apply pressure against the tape, thus holding the tape firm against the recording head. If this is not true, check the pressure pad spring (29); if loose or missing, replace.

Erasing Incomplete Or No Erase-

1. Dirt on face of play-record head.
   (a) Clean with soft cloth and carbon tetrachloride.

2. Oscillator coil assembly or tube not operating.
   (a) Check erase voltage with an AC vacuum tube voltmeter. There should be a reading of approximately 45 volts.

3. Defective erase coil in head.
   (a) Check erase head continuity.

4. Pressure pads worn or not properly adjusted. See "Pressure Pad And Lever Adjustments".

Failure To Record-

1. Record coil open.
   (a) Replace play-record head (30).

2. Insufficient bias voltage.
   (a) Check bias voltage across play-record head with an AC vacuum tube voltmeter. There should be a reading of approximately 100 volts.

3. Dirt on face of play-record head.
   (a) Clean with soft cloth and carbon tetrachloride.

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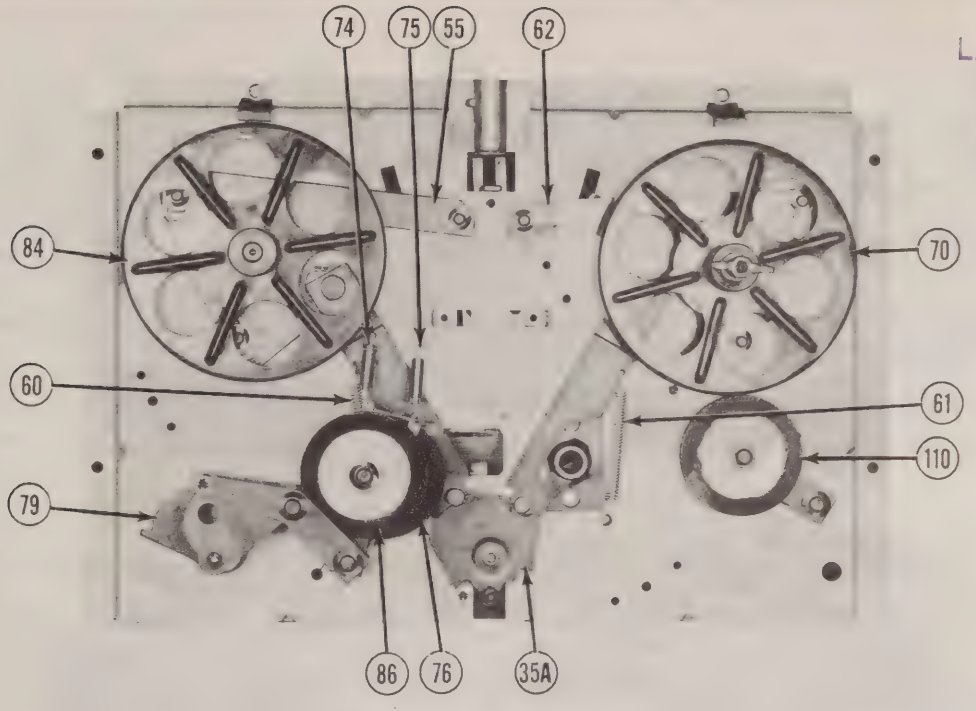


Figure 4

4. Pressure pad worn, defective or not properly adjusted.
(a) Adjust pressure pad or replace. See "Pressure Pad And Lever Adjustments".

Will Not Play Back-

1. Open coil in play-record head.
(a) Replace head.

2. Open input circuit.
(a) Check circuit.

Howl Or Ringing Sound-

1. Microphonic tube.
(a) Replace defective tube.

Trouble Common To Radio Receivers-

1. Defective components.
(a) Check and replace in accordance with standard practice.

Rewind Inoperative, Noisy Or Irregular-

1. Defective motor pulley assembly (94).
(a) Replace.

2. Supply reel shaft support assembly (55), dirty or defective.
(a) Clean, lubricate or replace.

3. Supply reel support spring (60) is broken.
(a) Replace.

4. Brake (45) dragging on take-up reel.
(a) Adjust brakes. See "Adjusting Brake Lever Assembly".

Tape Overruns From Rewind To Stop-

1. Take-up reel brakes (45) not functioning properly, worn or improperly adjusted.
(a) Replace or readjust. See "Adjusting Brake Lever Assembly".

Take-Up Or Fast Forward Inoperative, Noisy Or Irregular Drive-

1. Take-up clutch worn or out of adjustment.
(a) Adjust or replace. See "Correcting Take-Up And Fast-Forward Troubles".

2. Drive pin (67) missing.
(a) Replace.

3. Brakes dragging on supply reel.
(a) Adjust brakes. See "Adjusting Brake Lever Assembly".

4. Take-up reel support plate (62) dirty or damaged.
(a) Clean, lubricate or replace. See "Correcting Take-Up And Fast-Forward Troubles".

5. Noisy, take-up or fast forward.
(a) Clean, lubricate or replace.

6. Defective idler wheels (76 or 86).
(a) Replace. See "Correcting Take-Up And Fast-Forward Troubles". (Paragraph 4).

7. Reel take-up support plate spring (61) broken.
(a) Replace.

Tape Overruns From Fast Forward To Forward Position-

1. Supply reel brakes not functioning properly, worn or out of adjustment.
(a) Replace or readjust. See "Adjusting Brake Lever Assembly".

2. Pinch roller (18) damaged or out of adjustment.

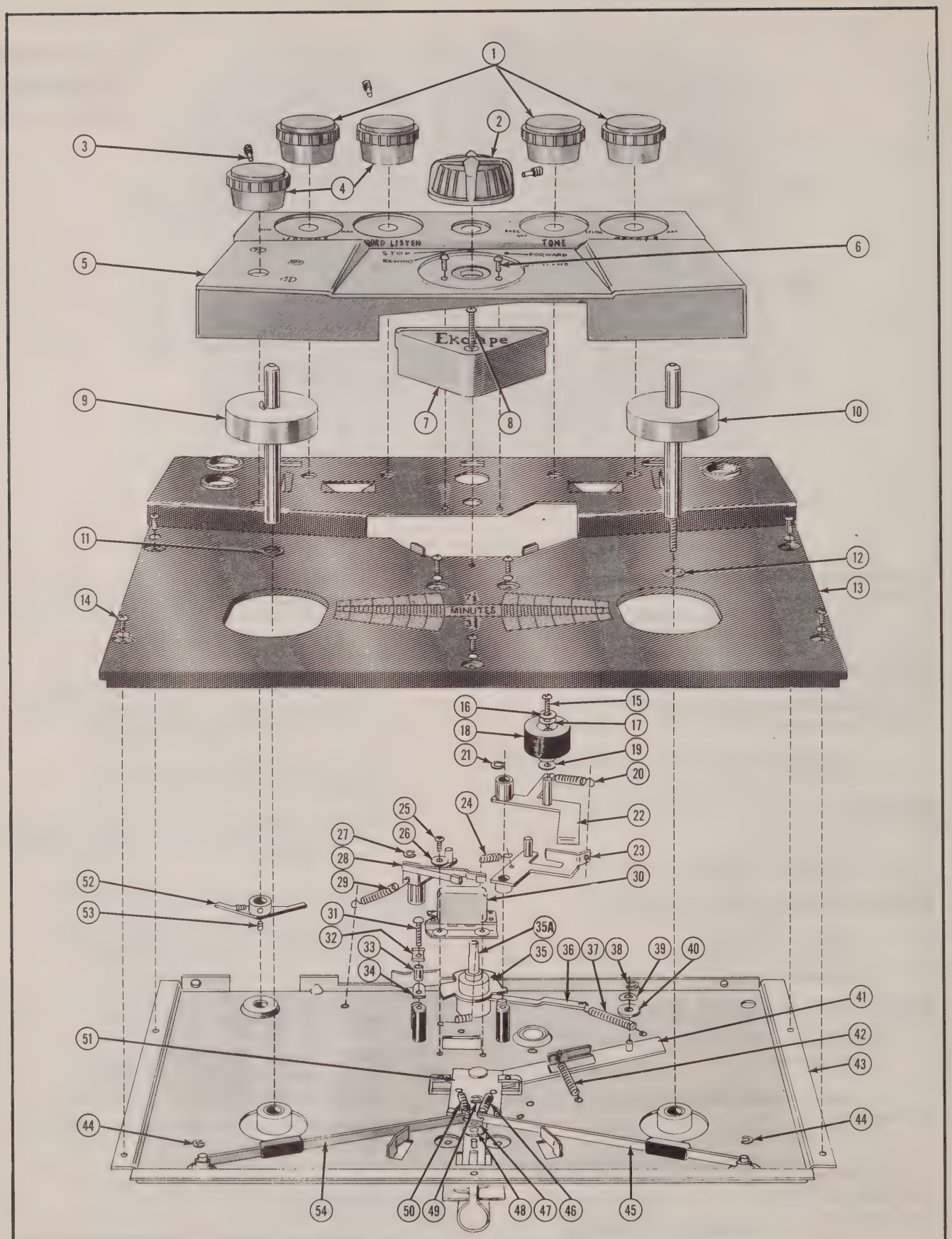


Figure 5A. Exploded View Of Parts Above Baseplate.

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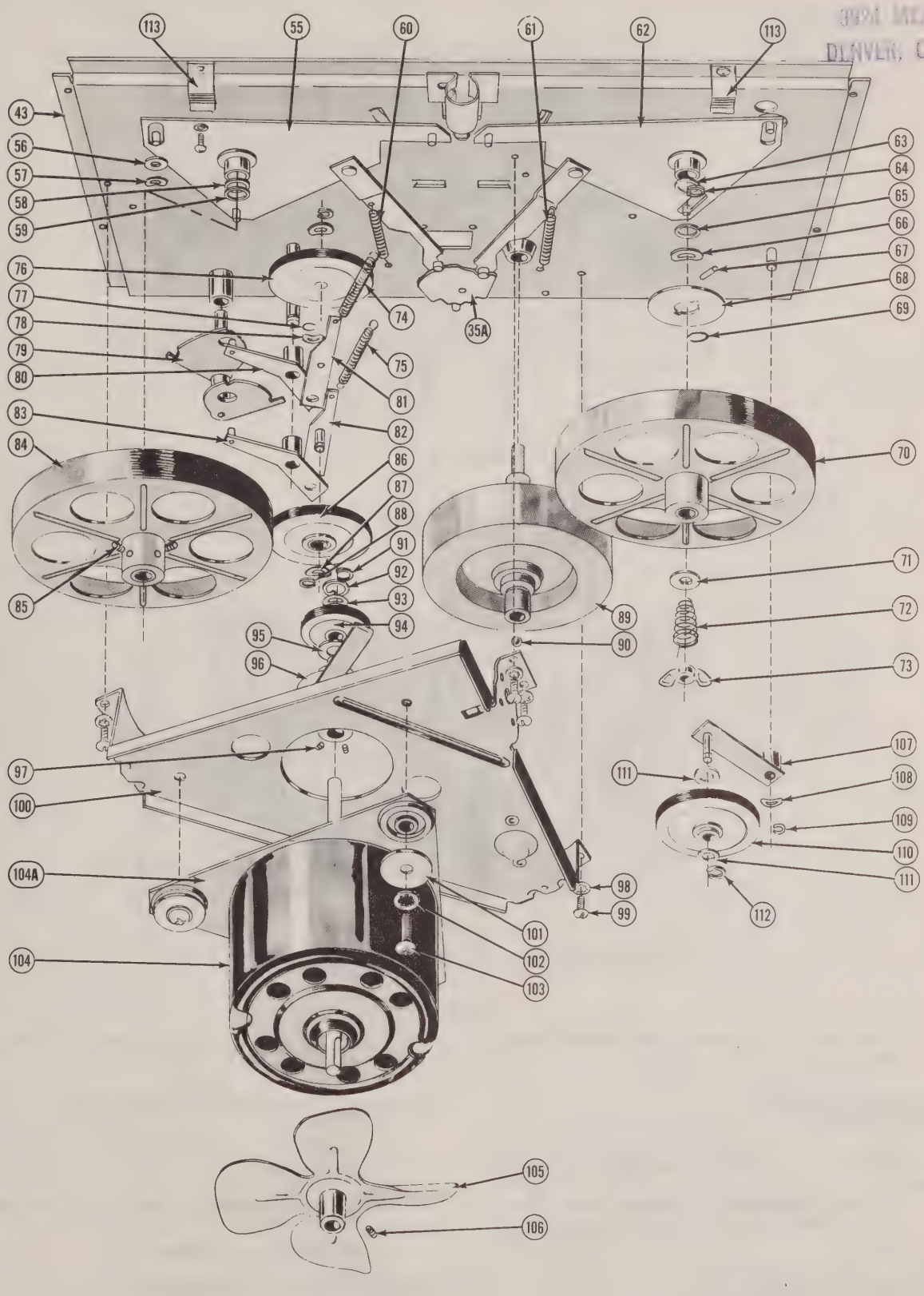


A PHOTOFACT "EXPLODED" VIEW

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Figure 5B. Exploded View Of Parts Below Baseplate.

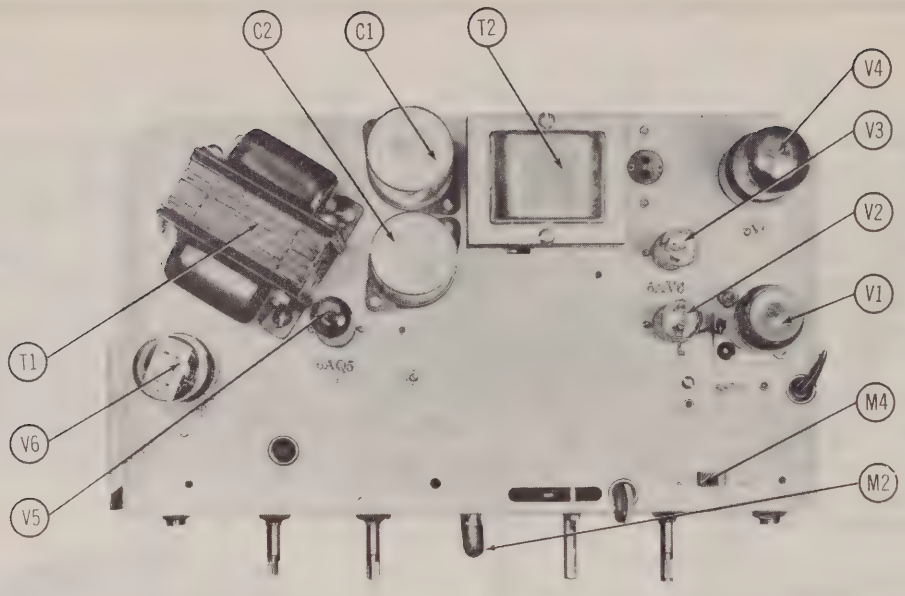



Figure 6

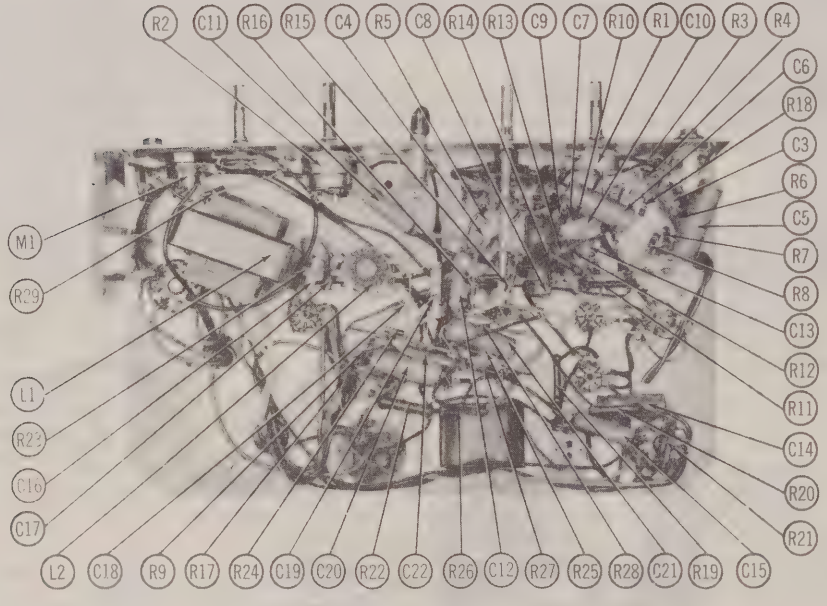



Figure 7

(a) Repair or replace. See "Pinch Roller Adjustment".

Noisy Running In Stop And Forward Positions-

1. Defective idlers, dry bearings or flat spots on idlers.
   (a) Clean, lubricate or replace. See "Correcting Take-Up And Fast-Forward Troubles".

Tape Spills Out Of Supply Reel From Stop To Forward Position-

1. Dirty or defective pinch roller (18).
   (a) Clean, lubricate or replace. See "Correcting Take-Up And Fast-Forward Troubles".

2. Pinch roller lever assemblies (22 and 23) out of adjustment or damaged.
   (a) Adjust or replace. See "Pinch Roller Adjustment".

Mechanism Control Knob (2) Inoperative-

1. Loose set screw in knob.
   (a) Tighten.

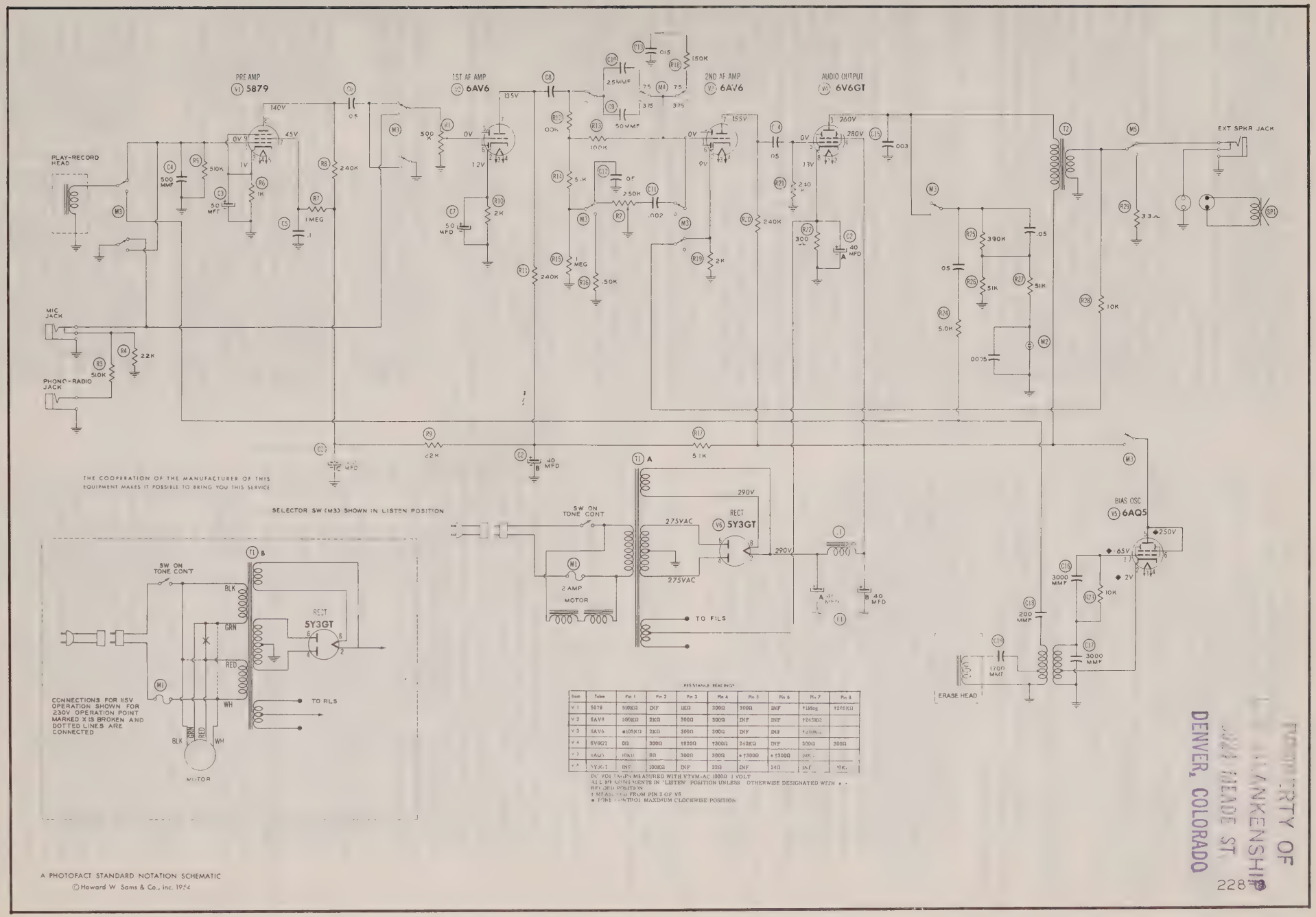
2. Loose set screws in pinch roller cam assembly (35).
   (a) Adjust and tighten.

Speed Selector Not Functioning-

1. Broken springs (74 and 75) on drive idler assemblies.
   (a) Replace.

Speed Equalization Switch Not Functioning-

1. Switch cam assembly (52) loose or broken.
   (a) Tighten or replace.




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 5879 | 510KΩ | INF | 1KΩ | 300Ω | 300Ω | INF | †1Meg | †285KΩ |
| V 2 | 6AV6 | 100KΩ | 2KΩ | 300Ω | 300Ω | INF | INF | †245KΩ | |
| V 3 | 6AV6 | ●105KΩ | 2KΩ | 300Ω | 300Ω | INF | INF | †●105K | |
| V 4 | 6V6GT | 0Ω | 300Ω | †820Ω | †300Ω | 240KΩ | INF | 300Ω | 300Ω |
| V 5 | 6AQ5 | 10KΩ | 8Ω | 300Ω | 300Ω | ● †300Ω | ● †300Ω | 10K | |
| V 6 | 5Y3GT | INF | 100KΩ | INF | 32Ω | INF | 34Ω | INF | 10K |

DC VOLTAGES MEASURED WITH VTVM-AC 1000Ω / VOLT
ALL MEASUREMENTS IN 'LISTEN' POSITION UNLESS OTHERWISE DESIGNATED WITH ● - RECORD POSITION
† MEASURED FROM PIN 2 OF V6
● TONE CONTROL MAXIMUM CLOCKWISE POSITION

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2. Switch contacts worn, dirty or broken.
(a) Clean contacts or replace. See "Speed Equalization Switch Adjustment".

Machine Inoperative When Mechanism Control Knob Is Operated-

1. Damaged or worn cam and shaft assembly (35A).
(a) Replace.

ADJUSTMENTS

Pressure Pad And Lever Adjustments-

Cleaning, adjusting or replacing pressure pad assembly and lever assemblies should be done in the following manner:

1. To adjust pressure pad assembly (28), remove back cover (5) and top panel (13). To remove assembly for cleaning, repair or adjustment, remove spring (29) and retaining ring (27). Rotate the pressure pad assembly slightly counterclockwise and lift off. Reassemble in reverse order and lubricate (see "Lubrication"). Adjust by turning cam and shaft assembly (35A) to "Forward" position and check to be sure pressure pads engage groove of head properly.

NOTE: Be sure flat of pad presses against the erase and record pole pieces. To adjust properly, bend levers accordingly.

Improper Rewind Operation-

If the unit does not perform the rewind operation properly, check as follows:

1. A defective motor pulley (94) may be the cause of improper rewind. To replace a defective motor pulley assembly, remove the three mounting screws (103) from motor and plate assembly (104). Carefully remove the assembly so as not to damage the drive idler assemblies (76 and 86). Before removing the motor pulley measure and note distance from hub to motor. Loosen the two Allen head set screws and remove the motor pulley assembly. Reassemble with a new pulley in reverse order. Be sure pulley hub is correct distance from motor as previously noted.

2. A dirty or defective supply reel shaft support assembly (55) may be responsible for improper rewind. To correct faulty operation, clean, repair or replace any damaged or worn parts.

Adjusting Brake Lever Assembly (45 and 54)-

If tape overruns from "Rewind" to "Stop" position, adjust, clean or replace brake lever assembly (45).

1. To adjust brake lever assembly (45), turn cam and shaft assembly (35A) to "Rewind" position. Adjust either by bending the brake lever assembly (45) or by slightly bending the stop on mechanism panel just enough to clear the cup disc on reel shaft (10). Clearance should not exceed 1/64 inch. Adjust brake lever (45) so that remote lever (51) returns to "Stop" position. Check to be sure brake lever (54) on the supply reel (9) is being held in its stop position by the remote lever assembly (51). If not, turn cam and shaft assembly (35A) to "Fast Forward" and adjust brake lever assembly (54) as outlined above. Before reassembly of top panel, thread recorder with tape and check unit for any further trouble.

2. If tape overruns from "Fast Forward" to "Forward", check operation of brake lever (54) as explained in above paragraph with this exception; turn cam and shaft assembly (35A) to "Fast Forward" position and adjust brake lever (54) on the supply reel (9). Check brake lever (45) on the take-up reel to be sure it is held in its stop position by the remote lever assembly (51). If not, turn cam and shaft assembly (35A) to "Rewind" and adjust brake lever as covered in above paragraph.

Adjusting Brake Arm Assembly (113)-

If after completing adjustments as covered in "Adjusting Brake Lever Assembly", the overrun on "Rewind" and "Fast Forward" is not corrected, remove the unit from the case and check as follows:

1. Check "Rewind" position first and adjust or replace brake arm assembly (113). First be sure brake pad is still attached to arm. Turn cam and shaft assembly (35A) to the "Rewind" position and adjust the brake arm (113) so pad just clears the reel pulley assembly (70) but by no more than 1/64 inch.

2. Check "Fast Forward" position and adjust or replace brake arm assembly (113). First be sure brake pad is still attached to arm. Turn cam and shaft assembly (35A) to "Fast Forward" position and adjust brake arm (113) so that the pad clears reel pulley assembly (84) by no more than 1/64 inch.

Correcting Take-Up And Fast Forward Troubles-

If take-up and fast forward drive does not function properly, remove unit from case and check as follows:

1. If the take-up or fast-forward drive is weak, screw the self-locking wing nut (73) on the reel shaft (10) so spring (72) will produce a greater friction drive.

2. If after adjusting the self-locking wing nut (73) a weak drive still exists, then remove wing nut, spring (72), washer (71) and reel pulley assembly (70) and check felt pad on pulley. If pad is worn badly, replace assembly (70), but if pad shows no excessive wear, remove clutch disc (68) and check to see if drive pin (67) is in place. Replace pin if missing and reassemble in reverse order and adjust wing nut.

3. If unit is noisy in "Forward" or "Fast-Forward" position, check to see if idler assembly (110) is dirty or damaged. Or it may be the result of dirty bearings on the take-up shaft or pulley assembly. To check, inspect idler assembly (110) and determine if dirty or defective. Remove retaining ring (112), fibre washer (111), idler assembly (110), and fibre washer (111). Clean any dirt or oil from idler tire and

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bearing. Clean flywheel and shaft assembly (89), drive area only, also reel pulley (70) drive area with a suitable solvent. Relubricate idler bearing and reassemble in reverse order.

4. If noise still exists in "Forward" or "Fast-Forward" position check the reel shaft assembly (10). Remove wing nut (73) and spring (72), washer (71), reel pulley (70), clutch disc (68), pin (67), U-washer (66), washer (65), retaining ring (64), fibre washer (63), reel pulley assembly (10) and fibre washer (12). Clean and inspect all parts for wear or damage. Clean the bearing in the reel support assembly (62) and inspect bearing. Relubricate and replace any defective parts and reassemble in order shown on exploded view.

Pinch Roller Adjustment-

If pinch roller is damaged or out of adjustment, clean and adjust in the following manner:

1. To clean the follower lever assembly (23) and the pinch roller lever assembly (22), remove springs (20 and 24), and retaining ring (21). Remove both assemblies and shaft attached to mechanism plate. Clean thoroughly, removing old grease and dirt, and relubricate. Reassemble in reverse order. Adjust tab on follower lever assembly (23) so that pinch roller (22) engages flywheel capstan just before lever (54) releases supply reel pulley (9) from "Stop" position to "Forward". This prevents flare out of the tape in the supply reel, from "Stop" to "Forward" position.

Cleaning The Play-Record Head-

The play-record head is subject to an accumulation of tape coating residue which is worn off the tape as it passes the head. This should be periodically removed since it may cause faint recordings and poor playback. Wipe off the record and erase head contact surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with carbon tetrachloride.

NOTE: Do not use a brush or excessive amount of solvent on the head surfaces.

Lubrication-

On normal use, the Ekotape requires a limited amount of lubrication. Motor, flywheel shaft, reel spindles, pinch roller assembly and idlers operate in oilite bearings. Whenever unit is disassembled for repair, clean all bearings, cams, and levers, and lubricate the following:

1. Lubricate all oilite bearings with SAE 20 oil.

2. Lubricate all cams and levers with Liqui-Moly NV Grease or equivalent.

3. Apply a thin film of lubricant on the working areas of parts.

NOTE: Do not use cleaning solvent on oilite bearings. Do not overlubricate.



ELECTRICAL PARTS LIST

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|---|---|---|---|---|---|
| V1 | | 5879, Pre-Amplifier | R1 | 241-17940 | Volume Control, 500KΩ |
| V2 | | 6AV6, 1st AF Amplifier | R2 | 241-17941 | Tone Cont. & On-Off Switch, 250KΩ |
| V3 | | 6AV6, 2nd AF Amplifier | | | |
| V4 | | 6V6GT, Audio Output | R3 | 29501-53 | Resistor, 510KΩ, 1/2 Watt |
| V5 | | 6AQ5, Bias Oscillator | R4 | 29501-29 | Resistor, 22KΩ, 1/2 Watt |
| V6 | | 5Y3GT, Rectifier | R5 | 29501-53 | Resistor, 510KΩ, 1/2 Watt |
| C1A | 241-14236 | Elect. Cap., 40mfd. @ 450V. | R6 | 29501-11 | Resistor, 1KΩ, 1/2 Watt |
| C1B | | Elect. Cap., 40mfd. @ 450V. | R7 | 29501-57 | Resistor, 1Meg., 1/2 Watt |
| C2A | 241-14238 | Elect. Cap., 40mfd. @ 25V. | R8 | 29501-48 | Resistor, 240KΩ, 1/2 Watt |
| C2B | | Elect. Cap., 40mfd. @ 450V. | R9 | 29501-29 | Resistor, 22KΩ, 1/2 Watt |
| C2C | | Elect. Cap., 40mfd. @ 450V. | R10 | 29501-14 | Resistor, 2KΩ, 1/2 Watt |
| C3 | S6063 | Elect. Cap., 50mfd. @ 6V. | R11 | 29501-48 | Resistor, 240KΩ, 1/2 Watt |
| C4 | S3750 | Cap., Ceramic, 500mmf. | R12 | 29501-41 | Resistor, 100KΩ, 1/2 Watt |
| C5 | S3595 | Cap., Paper, .1mfd. @ 400V. | R13 | 29501-41 | Resistor, 100KΩ, 1/2 Watt |
| C6 | S4261 | Cap., Paper, .05mfd. @ 400V. | R14 | 29501-21 | Resistor, 5.1KΩ, 1/2 Watt |
| C7 | S6063 | Cap., Elect., 50mfd. @ 6V. | R15 | 29501-57 | Resistor, 1Meg., 1/2 Watt |
| C8 | S3595 | Cap., Paper, .1mfd. @ 400V. | R16 | 29501-44 | Resistor, 150KΩ, 1/2 Watt |
| C9 | S6065-11 | Cap., Ceramic, 50mmf. | R17 | 29501-75 | Resistor, 5.1KΩ, 1 Watt |
| C10 | 29670-6 | Cap., Mica, 25mmf. | R18 | 29501-44 | Resistor, 150KΩ, 1/2 Watt |
| C11 | S4510 | Cap., Paper, .002mfd. @ 600V. | R19 | 29501-14 | Resistor, 2KΩ, 1/2 Watt |
| C12 | S4261 | Cap., Paper, .05mfd. @ 400V. | R20 | 29501-48 | Resistor, 240KΩ, 1/2 Watt |
| C13 | S4351 | Cap., Paper, .015mfd. @ 400V. | R21 | 29501-48 | Resistor, 240KΩ, 1/2 Watt |
| C14 | S4261 | Cap., Paper, .05mfd. @ 400V. | R22 | 29501-98 | Resistor, 300Ω, 1 Watt |
| C15 | 241-16370 | Cap., Paper, .003mfd. @ 1000V. | R23 | 29501-24 | Resistor, 10KΩ, 1/2 Watt |
| C16 | 241-14260-1 | Cap., Ceramic, 3000mmf. | R24 | 29501-53 | Resistor, 510KΩ, 1/2 Watt |
| C17 | 241-14260-1 | Cap., Ceramic, 3000mmf. | R25 | 29501-51 | Resistor, 390KΩ, 1/2 Watt |
| C18 | S6065-3 | Cap., Ceramic, 200mmf. | R26 | 29501-35 | Resistor, 51KΩ, 1/2 Watt |
| C19 | 241-14260-2 | Cap., Ceramic, 1700mmf. | R27 | 29501-35 | Resistor, 51KΩ, 1/2 Watt |
| C20 | S4261 | Cap., Paper, .05mfd. @ 400V. | R28 | 29501-76 | Resistor, 10KΩ, 1 Watt |
| C21 | 211-14912 | Cap., Paper, .05mfd. @ 200V. | R29 | 29502-21 | Resistor, 3.3Ω, 1 Watt |
| C22 | S4556 | Cap., Paper, .0005mfd. @ 600V. | T1A | 242-17934 | Power Transformer - Mod. 205 |

## ELECTRICAL PARTS LIST (Con't.)

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|---|---|---|---|---|---|
| T1B | 242-18104 | Power Transformer - Mod. 206 | M1 | | Fuse, 2 Amp. |
| T2 | 242-17936 | Output Transformer | M2 | | Neon Lamp, Type NE-51 |
| SP1 | 241-14070 | Speaker | M3 | 242-18165 | Selector Switch Assembly |
| L1 | 242-17937 | Filter Choke | M4 | 241-17949 | Equalizer Switch |
| L2 | 241-14246-1 | Bias Oscillator Coil | M5 | 241-17942 | Speaker Switch |

## MECHANICAL PARTS LIST

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|---|---|---|---|---|---|
| 1 | 241-17818 | Control Knobs, Amplifier | 59 | 241-17770 | Washer, Fibre |
| 2 | 242-17822 | Mechanism Control Knob Assy | 60 | 241-17801 | Spring |
| 3 | 241-15116 | Socket Hd. Set Screw, Special (used on item 4) | 61 | 241-17801 | Spring |
| | | | 62 | 242-17703 | Reel Shaft Support Assy. (right) |
| 4 | 242-17815 | Knob Assembly | 63 | 241-17770 | Washer, Fibre |
| 5 | 241-17816 | Back Cover | 64 | 29650-2 | Retaining Ring |
| 6 | 29529-14 | Rec. Pan Hd. Mach. Screw | 65 | 29602-133 | Washer, Steel |
| 7 | 241-17817 | Record Head Cover | 66 | 241-17775 | U-Washer, Steel |
| 8 | 29529-27 | Rec. Pan Hd. Mach. Screw | 67 | 241-17086-4 | Pin |
| 9 | 242-17761 | Reel Shaft Assembly (left) | 68 | 241-17777 | Clutch Disc |
| 10 | 242-17771 | Reel Shaft Assembly (right) | 69 | 29650-2 | Retaining Ring |
| 11 | 241-17770 | Washer, Fibre | 70 | 242-17773 | Reel Pulley Assembly |
| 12 | 241-17770 | Washer, Fibre | 71 | 29602-102 | Washer, Steel |
| 13 | 242-17830 | Top Panel Assembly | 72 | 241-17644 | Spring |
| 14 | 29529-28 | Mach. Screws, Top Panel Mtg. | 73 | 241-17799 | Self Locking Wing Nut |
| 15 | 29527-4 | Screw | 74 | 241-17802 | Spring |
| 16 | 29602-103 | Washer, Steel | 75 | 241-17802 | Spring |
| 17 | 241-17747 | Washer, Fibre | 76 | 242-17736 | Top Lever and Idler Assembly |
| 18 | 242-17744 | Pinch Roller Assembly | 77 | 29650-1 | Retaining Ring |
| 19 | 241-17722 | Washer, Fibre | 78 | 241-17723 | Spring Tension Washer |
| 20 | 242-12138 | Spring | 79 | 242-17724 | Cam Shaft Assembly |
| 21 | 29650-1 | Retaining Ring | 80 | 242-17737 | Follower Lever Assembly |
| 22 | 242-17741 | Pinch Roller Lever Assembly | 81 | 242-17738 | Idler Link Assembly |
| 23 | 242-17739 | Follower Lever Assembly | 82 | 242-17738 | Idler Link Assembly |
| 24 | 241-17734 | Spring | 83 | 242-17732 | Follower Lever Assembly |
| 25 | | Screw, Record Head Mounting | 84 | 242-17766 | Reel Pulley Assembly |
| 26 | | Flat Washer, Steel | 85 | | Set Screw, Allen |
| 27 | 29650-1 | Retaining Ring | 86 | 242-17731 | Lower Lever and Idler Assy. |
| 28 | 242-17748 | Pressure Pad Assembly | 87 | 241-17723 | Spring Tension Washer |
| 29 | 241-17801 | Spring | 88 | 29650-1 | Retaining Ring |
| 30 | 242-14159 | Play-Record-Erase Head Assy. | 89 | 242-17778 | Flywheel and Shaft Assembly |
| 31 | 29527-13 | Screw (2 used) | 90 | 241-13609 | Steel Ball |
| 32 | 241-17754 | Top Tape Guide (2 used) | 91 | 29650-1 | Retaining Ring |
| 33 | 241-17753 | Tape Guide Spacer (2 used) | 92 | | Keyed Washer |
| 34 | 241-17752 | Tape Guide Shelf | 93 | 241-17723 | Spring Tension Washer |
| 35 | 242-17710 | Pinch Roller Cam Assembly | 94 | 242-17788 | Motor Pulley Assy. -Model 205 (Includes items 95, 96 and 97) |
| 35A | 242-17707 | Cam and Shaft Assembly | | | |
| 36 | 242-17713 | Index and Interlock Lever Assy. | | 242-17788 | Motor Pulley Assy. -Model 206 (Includes items 95, 96 and 97) |
| 37 | 241-17801 | Spring | | | |
| 38 | 29651-1 | Retaining Ring | 95 | | Motor Pulley Clutch Washer |
| 39 | 241-12059 | Spring Tension Washer | 96 | | Motor Pulley |
| 40 | 29602-124 | Washer | 97 | | Allen Set Screw |
| 41 | | Remote Lever Arm (part of item 51) | 98 | | Lockwasher |
| | | | 99 | | Support Plate Mounting Screw |
| 42 | 241-17734 | Spring | 100 | 242-17765 | Support Plate Assembly |
| 43 | 242-17683 | Mechanism Plate Assembly | 101 | | Washer, Steel |
| 44 | 29651-1 | Retaining Ring | 102 | | Lockwasher |
| 45 | 242-17758 | Brake Lever Assembly | 103 | | Motor Mounting Screw |
| 46 | 241-17734 | Spring | 104 | 241-17674 | Motor - Model 205 |
| 47 | 241-12059 | Spring Tension Washer | | 241-17887 | Motor - Model 206 |
| 48 | 29602-122 | Washer | 104A | 241-17786 | Motor Mounting Plate |
| 49 | 29651-1 | Retaining Ring | 105 | 241-14134 | Fan |
| 50 | 241-17734 | Spring | 106 | | Set Screw |
| 51 | 242-17755 | Remote Lever Assembly | 107 | 242-17716 | Idler Link Assembly |
| 52 | 242-17728 | Switch Cam Assembly | 108 | 241-17723 | Spring Tension Washer |
| 53 | | Set Screw | 109 | 29650-1 | Retaining Ring |
| 54 | 242-17758 | Brake Lever Assembly | 110 | 242-17719 | Idler Assembly - Model 205 |
| 55 | 242-17695 | Reel Shaft Support Assy. (left) | | 242-17719-1 | Idler Assembly - Model 206 |
| 56 | 29602-124 | Washer | 111 | 241-17722 | Washer, Fibre |
| 57 | 241-12059 | Spring Tension Washer | 112 | 29650-1 | Retaining Ring |
| 58 | 241-17770 | Washer, Fibre | 113 | 242-17884 | Brake Arm Assembly |

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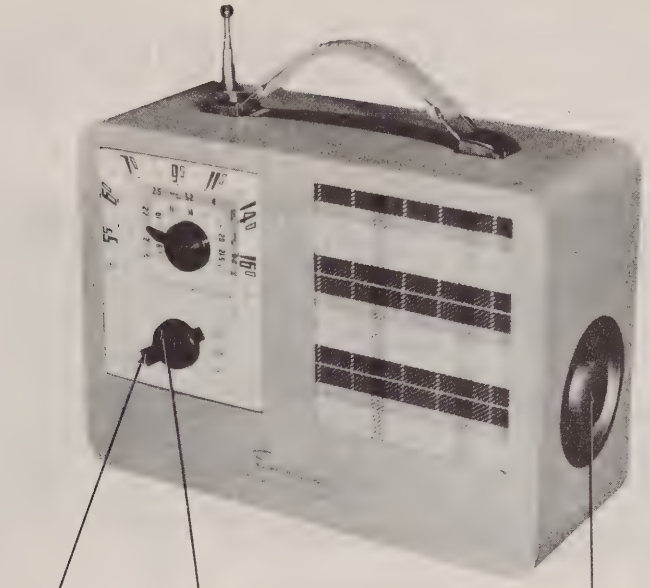
EMERSON
MODEL 746B (Ch. 120177-B)




EMERSON
MODEL 746B (Ch. 120177-B)

| | |
|---|---|
| TRADE NAME | Emerson Model 746B (Ch. 120177-B) |
| MANUFACTURER | Emerson Radio & Phono Corp., 111 Eighth Ave., New York, N.Y. |
| TYPE SET | Three Power Portable 3 Band AM Superheterodyne Receiver |
| TUBES (Five) | Types 1U4 RF Amp., 1L6 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output |
| POWER SUPPLY | 110-120 Volts AC-DC (230 Volts AC with Emerson Autoformer Part #730021)(or) 9 Volts "A" Supply & 90 Volts "B" Supply |
| RATING | .12 Amp. @ 117 Volts AC (or) 50MA @ 9 Volts DC & 13MA @ 90 Volts DC |
| TUNING RANGE—BROADCAST | 540-1620KC SHORT WAVE (#1) 2-6.2MC (#2) 9.5-21.7MC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .01MFD | High side to pin 6 (grid) of 1L6 (V2). Low side to B-. | 455KC (400~Mod) | Std. | Tuning gang fully open | Across Voice Coil | A1, A2 A3, A4 | Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. |
| 2. | | Loop | 1640KC | " | " | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 1420KC | " | Tune to 1420KC signal | " | A6, A7 | " |
| 4. | | " | 530KC | " | Tuning gang fully closed | " | A8, A9 | " |
| 5. | Repeat steps 2, 3 and 4. | | | | | | | |
| 6. | 200MMF | High side to external antenna terminal Low side to chassis. | 6.5MC | SW-1 | Tuning gang fully open | Across voice coil | A10 | Adjust for maximum deflection. |
| 7. | " | " | 5.5MC | " | Tune to 5.5MC signal | " | A11 A12 | " |
| 8. | " | " | 22.0MC | SW-2 | Tuning gang fully open | " | A13 | " |
| 9. | " | " | 21.5MC | " | Tune to 21.5MC signal | " | A14 A15 | Rock tuning gang thru 21.5MC signal while adjusting A14 and A15 for maximum deflection. |

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# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | EMERSON PART No. | STANDARD REPLACEMENT | | |
| V1 | RF Amplifier | 1U4 | 1U4 | 6AR | |
| V2 | Converter | 1L6 | 1L6 | 7DC | |
| V3 | IF Amplifier | 1U4 | 1U4 | 6AR | |
| V4 | Det-AVC-AF Amp. | 1U5 | 1U5 | 6BW | |
| V5 | Audio Output | 3V4 | 3V4 | 6BX | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

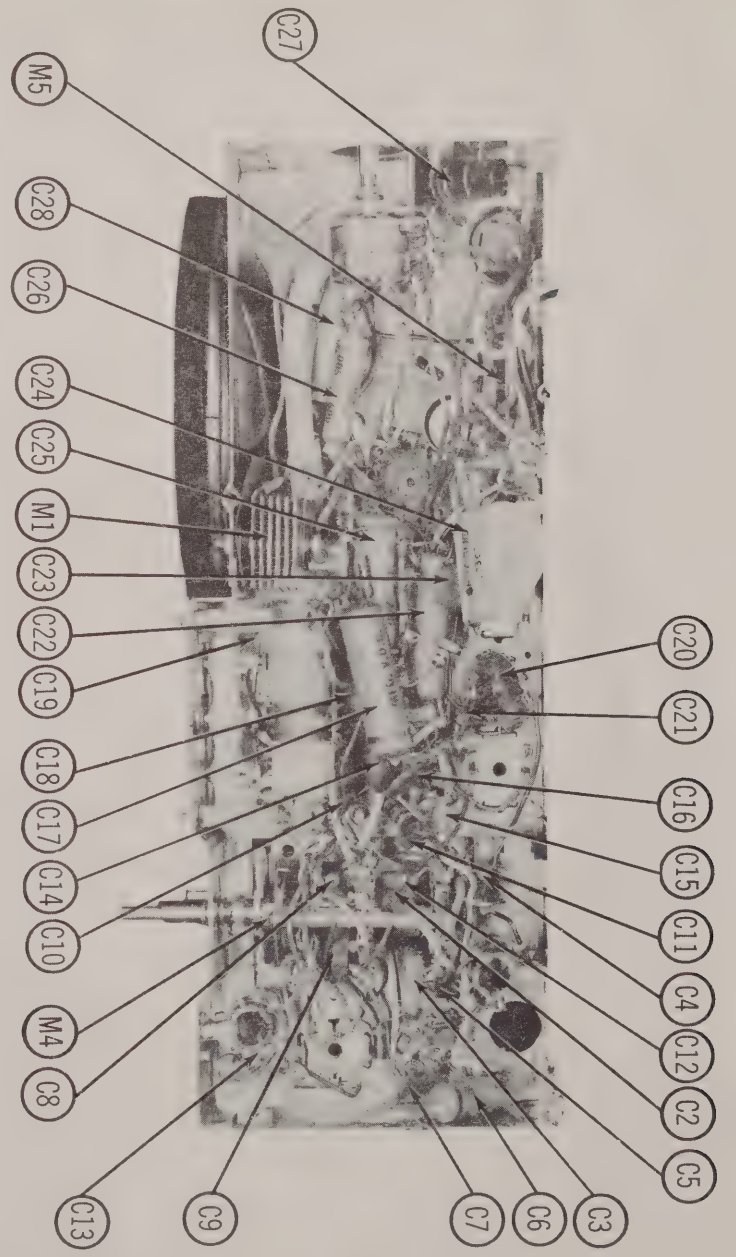
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | EMERSON PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ▪80 | 150 | 925239 | AFH4-23 | | | | FP302.7 | | |
| B | ▪40 | 150 | | | | | | | | |
| C | 300 | 25 | | | | | | | | |
| C2 | 1000 | | 928077 | BPD-001 | DD-102 | TM5D1 | 801-001 | DC-521 | 5HK-D1 | |
| C3 | 560 | 500 | 915036 | | | | | | | |
| C4 | 10 | | 928002 | SI10N750 | TCN-10 | | N750K-100 | NT-541 | 5TCU-Q1 | |
| C5 | 270 | | 928075 | SI270 | D6-271 | | GP1K-271 | UC-5327 | 5GA-T27 | |
| C6 | .05 | 200 | 923354 | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C7 | 10000 | | 928027 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C8 | 3.3 | | 915032 | SI3.3NP0 | TCN-3.3 | | NP0K-3R3 | | | |
| C9 | 620 | 500 | 915035 | | | | | | | |
| C10 | 270 | | 928075 | SI270 | D6-271 | | GP1K-271 | UC-5327 | 5GA-T27 | |
| C11 | 47 | | 928038 | SI47 | D6-470 | | GP1K-470 | UC-5447 | 5GA-Q47 | |
| C12 | 470 | 500 | 915035 | | | | | | | |
| C13 | 5000 | | 928109 | BPD-005 | MD-502 | TM5D5 | | DC-525 | 5HK-D5 | |
| C14 | 5000 | | 928109 | BPD-005 | MD-502 | TM5D5 | | DC-525 | 5HK-D5 | |
| C15 | .68 | | 915040 | | | | | | | |
| C16 | 10000 | | 928027 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C17 | .1 | 200 | 923315 | P288-1 | DF-104 | PTE4P1 | | PT401 | 2TM-P1 | |
| C18 | .05 | 200 | 923354 | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C19 | 1500 | 500 | 915033 | | | | | | | |
| C20 | 10000 | | 928027 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C21 | 10000 | | 928027 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C22 | .1 | 200 | 923315 | P288-1 | DF-104 | PTE4P1 | | PT401 | 2TM-P1 | |
| C23 | 5000 | | 928109 | BPD-005 | MD-502 | TM5D5 | | DC-525 | 5HK-D5 | |
| C24A | 5000 | | *923027 | *PA-117 | *PC-91 | | *1407-03 | | *103C3 | |
| B | 100 | | | | | | | | | |
| C | 5000 | | | | | | | | | |
| C25 | .1 | 200 | 923315 | P288-1 | DF-104 | PTE4P1 | | PT405 | 2TM-P1 | |
| C26 | .005 | 600 | 923753 | P688-005 | D6-502 | PTE6D5 | | PT625 | 6TM-D5 | |
| C27 | .047 | 400 | 922200 | P488-047 | DF-503 | PTE4S47 | | PT4147 | 4TM-S47 | |
| C28 | .05 | 400 | 923554 | P488-05 | DF-503 | PTE4S5 | | PT415 | 4TM-S5 | |

* Items C24A, C24B, C24C, R14A, R14B and R14C are combined in one unit.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | EMERSON PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 1Meg | ½ | 390224 | Q13-137 | AG-63-Z | BSK-70-S | U-53 | Volume |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-2 | SWB-2 | Not Req. | US-27 | Attach to R1A |

# CHASSIS—BOTTOM VIEW



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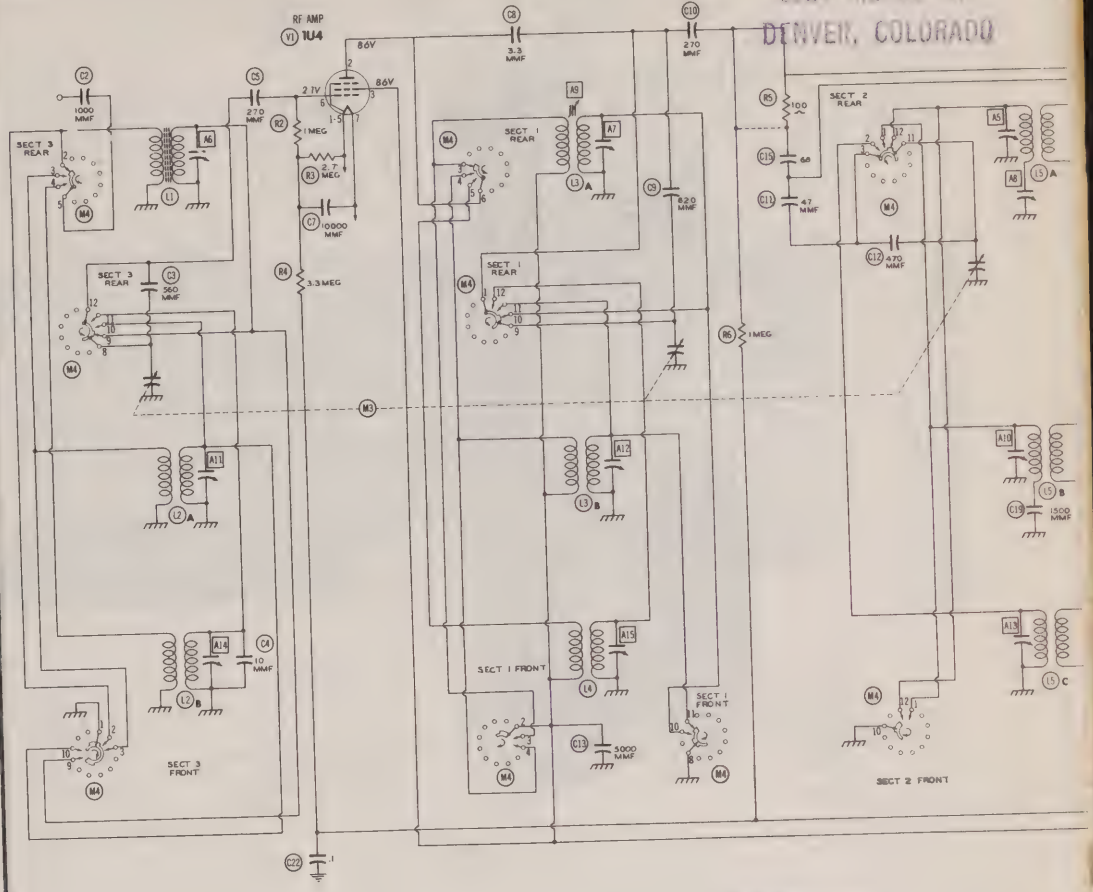
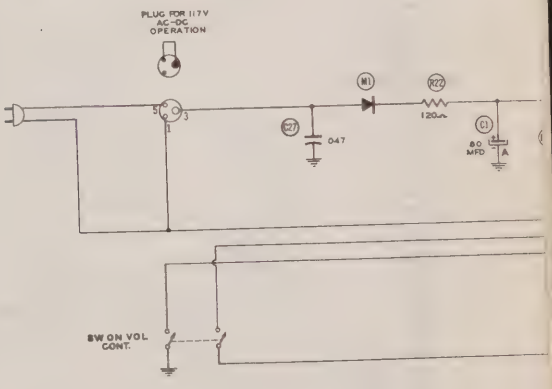



1F = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

FUNCTION SELECTOR SW SHOWN IN BROADCAST POSITION
SW SEQUENCE
1 - DC
2 - SW BAND 2.0-6.2MC
3 - SW BAND 6.3-21.7MC




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 1U4 | * | † 1. 6KΩ | † 1. 6KΩ | 2Meg | * | 3. 2Meg | * |
| V 2 | 1L6 | * | † 1. 6KΩ | † 1. 6KΩ | 220KΩ | † 48KΩ | 4Meg | * |
| V 3 | 1U4 | * | † 2. 6KΩ | † 2. 6KΩ | INF | * | 3. 3Meg | * |
| V 4 | 1U5 | * | † 1Meg | † 4. 7Meg | 1Meg | † 1. 6KΩ | 10Meg | * |
| V 5 | 3V4 | * | † 1. 6KΩ | † 2KΩ | 0Ω | * | 2. 2Meg | * |

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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# FADA MODELS UDL2100T, UH21T, U2100C, T, U2150C

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MODEL UT21T

FADA MODELS UDL2100T, UH21T, U2100C, T, U2150C

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# FADA MODELS UDL2100T, UH21T, U2100C, T, U2150C

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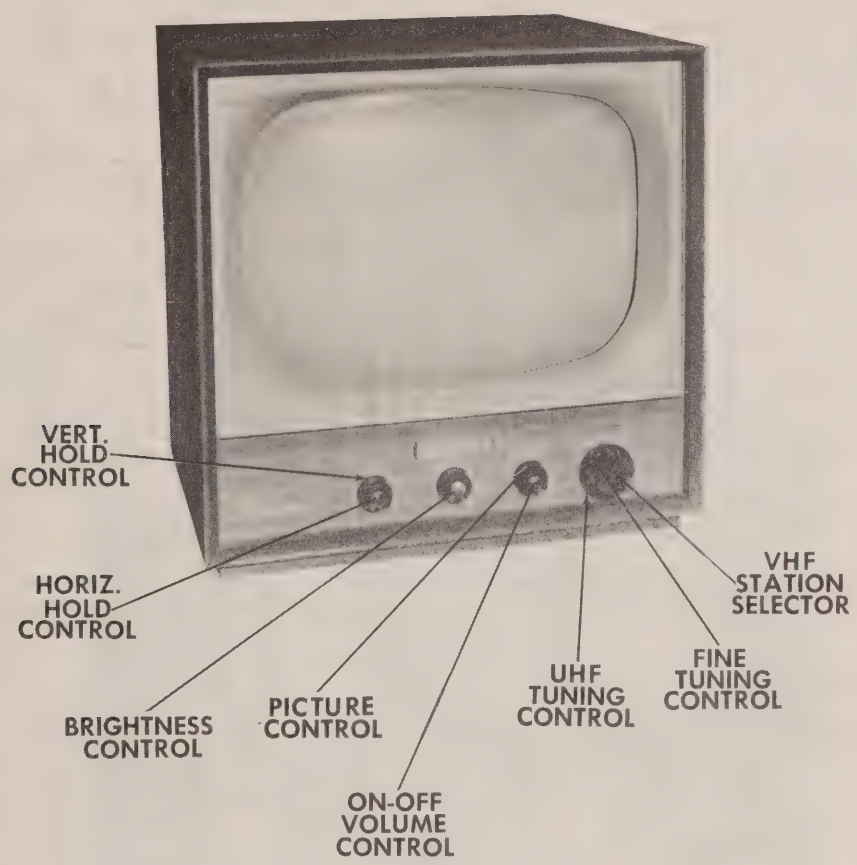


FADA MODELS UDL2100T, UH21T, U2100C, T, U2150C

FADA MODEL UH21T

| | |
|---|---|
| TRADE NAME | Fada Models UDL2100T, UH21T, U2100C, U2100T, U2150C |
| MANUFACTURER | Fada Radio & Electric Co., Inc., 525 Main St., Belleville, N. J. |
| TYPE SET | Television Receiver |
| TUBES | Twenty-two |
| POWER SUPPLY | 110-120 volts AC-60 cycle RATING 2.24 amp. @ 117 volts AC |
| TUNING RANGE— | Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) |

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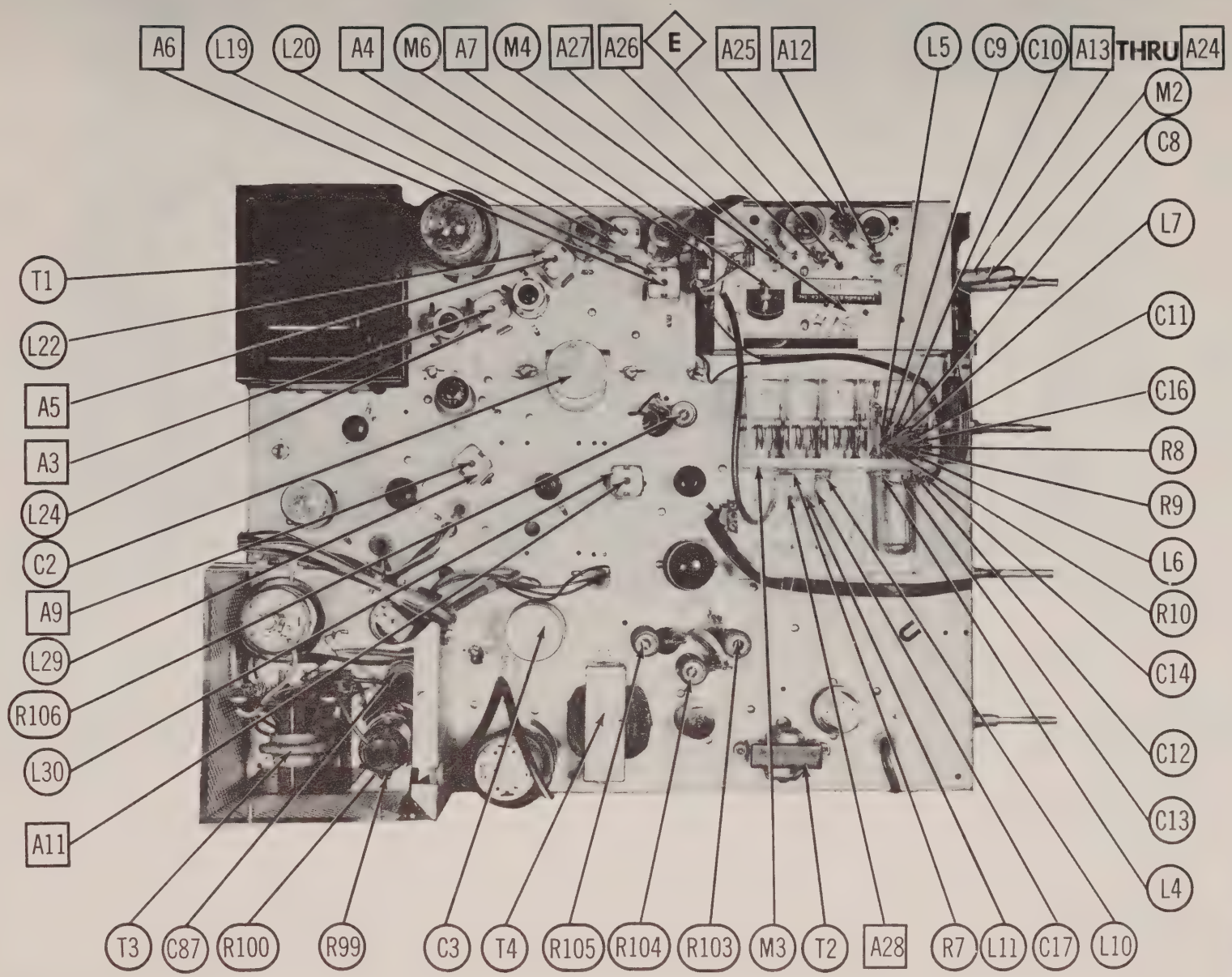


For tube location see tube placement chart page 5.

CHASSIS TOP VIEW

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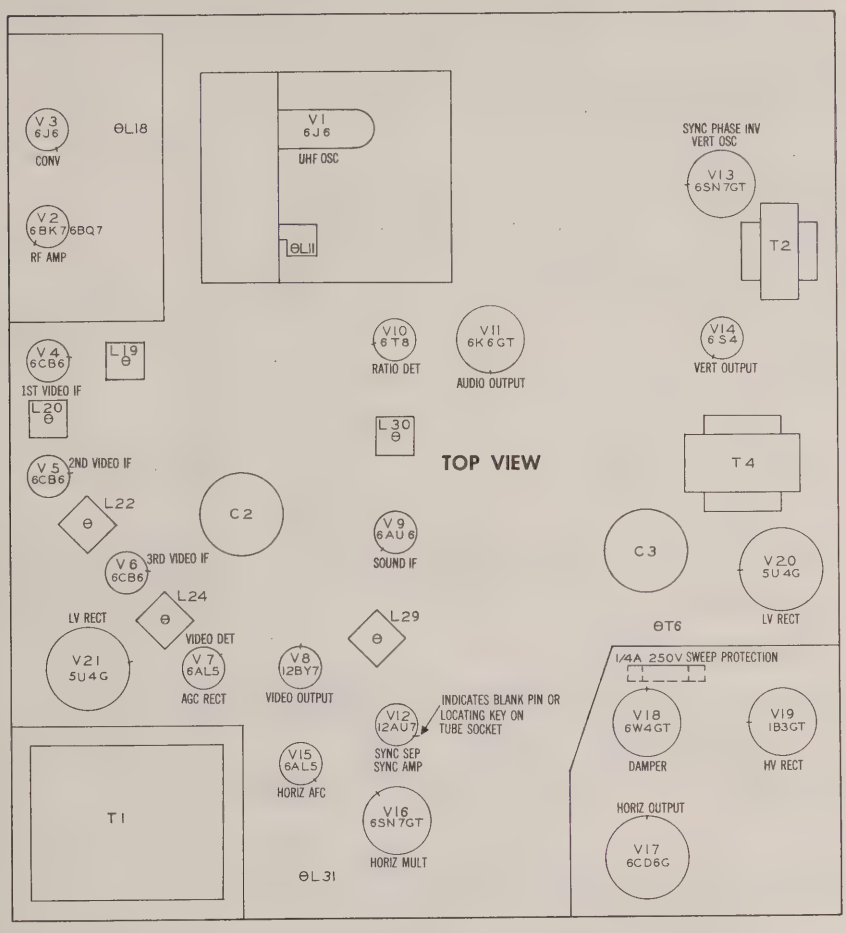
# TUBE PLACEMENT CHART





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# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20, V21**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V7, V8, (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V8, V22**
Has pic, no sound - **V9, V10, V11**

SYNC FAILURE
No vert. sync - **V13, V14**
No horiz. sync - **V13, V15, V16**
No vert. or horiz. sync -**V12, V13**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V22, Fuse (M1)**
No vertical deflection - **V13, V14**
Poor vert. linearity or foldover - **V13, V14**
Poor horiz. linearity or foldover -**V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20, V21**
Vert. off freq. - **V13, V14**
Horiz. off freq. - **V13, V15, V16**

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

## VIDEO IF ALIGNMENT

Remove the converter tube (V3) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications. The local oscillator may also be disabled by removing the channel 13 oscillator strip and then performing the alignment with the tuner set to channel 13. The latter method is recommended when a dummy 6J6 is not available.
Connect the negative lead of a 4. 5 volt battery to the ungrounded side of C49. Connect the positive lead to chassis.
Connect a 47KΩ resistor in series with the DC probe of the VTVM.
Connect a 47KΩ decoupling resistor in series with the high side of the vertical amplifier input of the oscilloscope.
If output of sweep generator is too low to give a usable indication on the oscilloscope, reduce the bias to 3 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | Direct | High side to an ungrounded tube shield floating over dummy converter. tube. Low side to chassis. | Not used | 42. 5MC (Unmod) | Any | Use VTVM | A1 | Adjust for maximum deflection. Attenuate signal generator to maintain 2 volts at VTVM. |
| 2. | " | " | " | 45. 5MC | " | " | A2 | " |
| 3. | " | " | " | 44. 0MC | " | " | A3 | " |
| 4. | " | " | " | 41. 25MC | " | " | A4 | Adjust for MINIMUM deflection. |
| 5. | " | " | " | 47. 25MC | " | " | A5 | |
| 6. | " | " | 44MC (10MC Swp) | 45. 75MC 42. 25MC | " | Vert. amp to point (A) Low side to chassis. | A1, A2 A3 | Adjust for response curve similar to Fig. 1. Adjust A1 and A2 to place 42. 25MC and 45. 75 MC markers at 70%. A3 affects tilt. Attenuate generator for 1 volt peak to peak on oscilloscope. |
| 7. | " | " | " | 41. 25MC 42. 25MC 45. 75MC 47. 25MC | " | " | A6, A7 | Adjust for response curve similar to Fig. 2. |

## SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 8. | . 001MFD | High side to point (A). Low side to chassis. | 4. 5MC (Unmod) | Any | DC probe to point (B). Common to chassis. | A8, A9 A10 | Adjust for maximum deflection. |
| 9. | " | " | " | " | Dc probe to point (C). Common to chassis. | A11 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

## SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 8. | . 001MFD | High side to point (A). Low side to chassis. | 4. 5MC (450KC Swp) | 4. 5MC | Any | Vert. amp. to point (B). Low side to chassis. | A8, A9 A10 | Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and summetry as in Fig. 3. |
| 9. | " | " | " | " | " | Vert. amp. to point (C). Low side to chassis. | A11 | Reconnect stabilizer capacitor C7. Adjust so that 4. 5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines. |

## OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency, approximately the same amount for a majority of the channels it may be possible to correct them in one step using A12.
It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A12 will not bring all channels well withing the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 10. | Two 120Ω carbon resistors | Across antenna terminals with 120Ω in each lead. | 213. 25MC (10MC Swp) | 211. 25MC 215. 75MC | 13 | Vert. amp. to point (B). Low side to chassis. | A13 | Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%. |
| | | | 207MC (10MC Swp) | 205. 25MC 209. 75MC | 12 | | A14 | |
| | | | 201MC (10MC Swp) | 199. 25MC 203. 75MC | 11 | | A15 | |
| | | | 195MC (10MC Swp) | 193. 25MC 197. 75MC | 10 | | A16 | |
| | | | 189MC (10MC Swp) | 187. 25MC 191. 75MC | 9 | | A17 | |
| | | | 183MC (10MC Swp) | 181. 25MC 185. 75MC | 8 | | A18 | |
| | | | 177MC (10MC Swp) | 175. 25MC 179. 75MC | 7 | | A19 | |
| | | | 85MC (10MC Swp) | 83. 25MC 87. 75MC | 6 | | A20 | |
| | | | 79MC (10MC Swp) | 77. 25MC 81. 75MC | 5 | | A21 | |
| | | | 69MC (10MC Swp) | 67. 25MC 71. 75MC | 4 | | A22 | |
| | | | 63MC (10MC Swp) | 61. 25MC 65. 75MC | 3 | | A23 | |
| | | | 57MC (10MC Swp) | 55. 25MC 59. 75MC | 2 | | A24 | |

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3000 BLAKE ST
DENVER, COLORADO

# ALIGNMENT INSTRUCTIONS (cont)

## RF AND MIXER ALIGNMENT

Connect the bias battery as under video IF alignment, except use a 3 volt instead of 4.5 volt battery.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 11. | Two 120Ω carbon resistors | Across antenna terminals with 120Ω in each lead. | 207MC (10MC Swp) | 205. 25MC 209. 75MC | 12 | Vert. amp. thru 10KΩ to point (E). Low side to chassis. | A25, A26 A27 | Adjust for response curve similar to Fig. 6. |
| 12. | " | " | 213MC (10MC Swp) | 211. 25MC 215. 75MC | 13 | " | | Check for response similar to Fig. 6. If markers fall below 70% on any channel, make compromise adjustments of A25, A26, and A27 with channel switch set to that channel. Then recheck all other channels to see that they have not been seriously affected. |
| | | | 201MC (10MC Swp) | 199. 25MC 203. 75MC | 11 | | | |
| | | | 195MC (10MC Swp) | 193. 25MC 197. 75MC | 10 | | | |
| | | | 189MC (10MC Swp) | 187. 25MC 191. 75MC | 9 | | | |
| | | | 183MC (10MC Swp) | 181. 25MC 185. 75MC | 8 | | | |
| | | | 177MC (10MC Swp) | 175. 25MC 179. 75MC | 7 | | | |
| | | | 85MC (10MC Swp) | 83. 25MC 87. 75MC | 6 | | | |
| | | | 79MC (10MC Swp) | 77. 25MC 81. 75MC | 5 | | | |
| | | | 69MC (10MC Swp) | 67. 25MC 71. 75MC | 4 | | | |
| | | | 63MC (10MC Swp) | 61. 25MC 65. 75MC | 3 | | | |
| | | | 57MC (10MC Swp) | 55. 25MC 59. 75MC | 2 | | | |

## UHF TUNER 44MC IF COIL ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Turn channel selector knob to "UHF" position .
Connect bias battery as under video IF alignment.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 13. | Two 120Ω carbon resistors | Across UHF antenna terminals with 120Ω in each lead. | 677MC (10MC Swp) | 675. 25MC 679. 75MC | 48 | Vert. amp. thru 47KΩ to point (A). Low side to chassis. | A28 | Adjust for response curve similar to Fig. 2. |
| 14. | " | " | 473MC (10MC Swp) | 471. 25MC 475. 75MC | 14 | " | | Check for response curve similar to Fig. 2. If necessary, retouch A28 slightly to obtain acceptable response. |
| 15. | " | " | 833MC (10MC Swp) | 831. 25MC 835. 75MC | 74 | " | | " |

## UHF OSCILLATOR ALIGNMENT

If an accurately calibrated UHF signal generator is not available the UHF oscillator may be aligned when a local UHF station is on the air. Tune to the known operating channel and adjust A29 for clearest picture and best sound. If satisfactory equipment is available proceed as shown in step 16.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 16. | Two 120Ω carbon resistors | Across UHF antenna terminals with 120Ω in each lead. | 869MC (Unmod) | 80 | DC probe to point (A). Common to chassis. | A29 | Adjust for maximum deflection. |

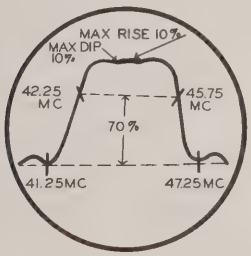


FIG. 1

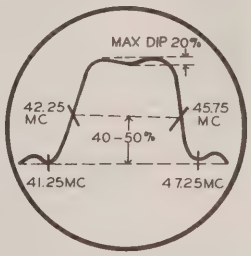


FIG. 2

FIG. 3

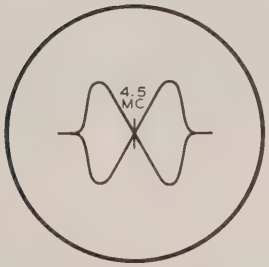


FIG. 4

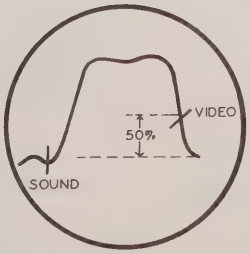


FIG. 5

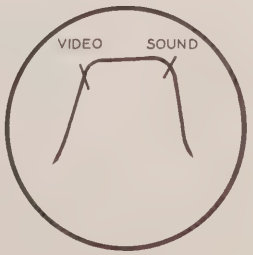
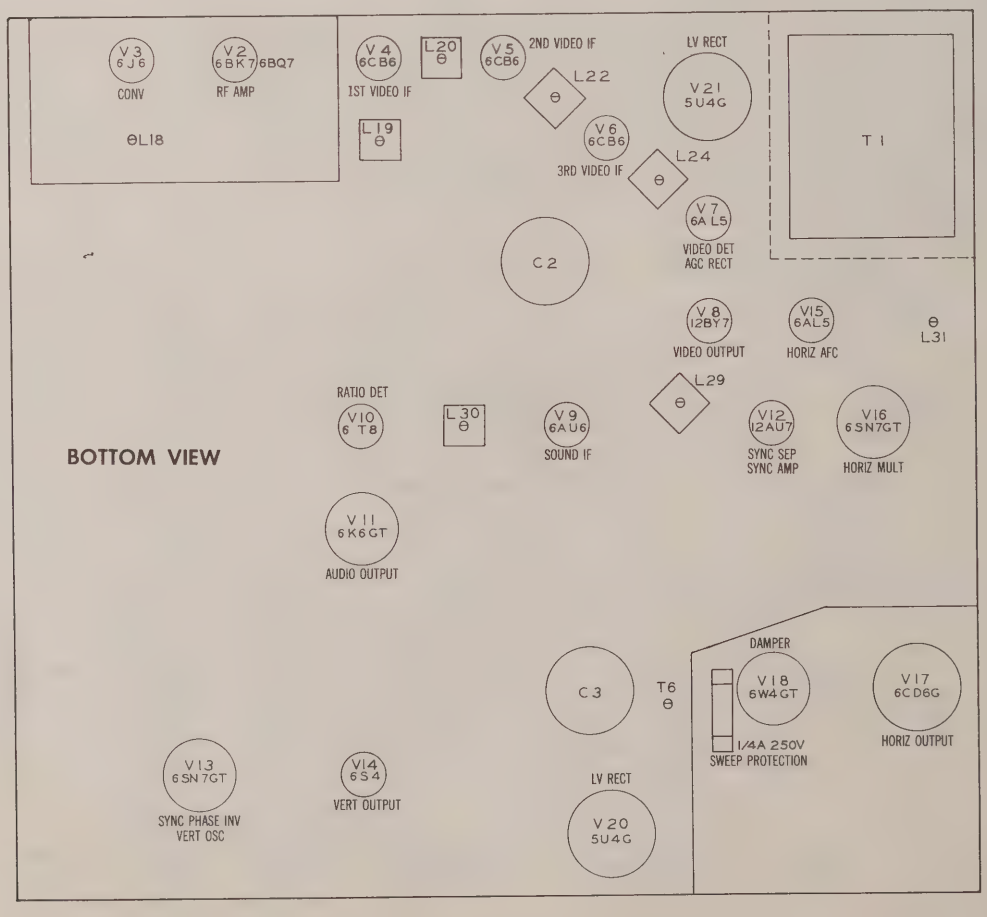


FIG. 6

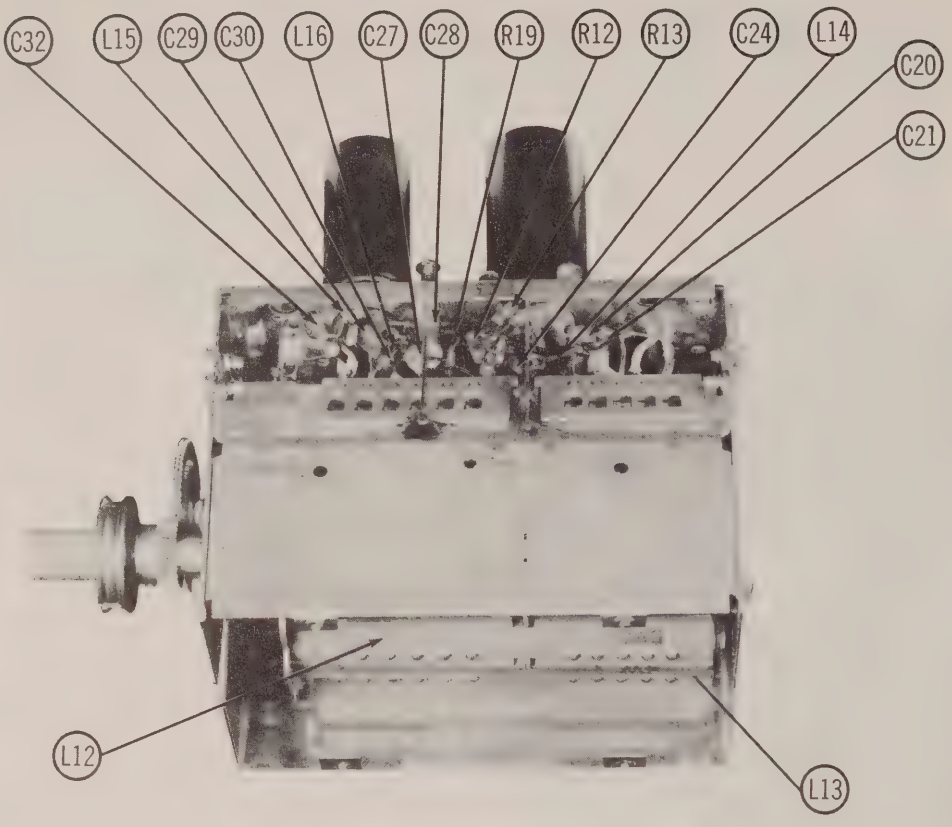
# RESISTANCE MEASUREMENTS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6J6 | †■4KΩ | †■4KΩ | 0Ω | .1Ω | 10KΩ | 10KΩ | 0Ω | | |
| V 2 | 6BK7 | †1.1Meg | 1.7Meg | 0Ω | .1Ω | 0Ω | †2KΩ | †1Meg | †1.1Meg | 0Ω |
| V 3 | 6J6 | †9KΩ | †14KΩ | .1Ω | 0Ω | 190KΩ | 10KΩ | 0Ω | | |
| V 4 | 6CB6 | 1.7Meg | 47Ω | .1Ω | 0Ω | †4KΩ | †4KΩ | 0Ω | | |
| V 5 | 6CB6 | 1.7Meg | 47Ω | .1Ω | 0Ω | †4KΩ | †4KΩ | 0Ω | | |
| V 6 | 6CB6 | .2Ω | 220Ω | .1Ω | 0Ω | †4KΩ | †4KΩ | 0Ω | | |
| V 7 | 6AL5 | .2Ω | 680KΩ | .1Ω | 0Ω | 650Ω | 0Ω | 5.6KΩ | | |
| V 8 | 12BY7 | 140Ω | 5.7KΩ | 0Ω | 0Ω | 0Ω | .1Ω | †6KΩ | †21KΩ | 0Ω |
| V 9 | 6AU6 | 47KΩ | 0Ω | .1Ω | 0Ω | †8.2KΩ | †8.2KΩ | 0Ω | | |
| V 10 | 6T8 | INF | 44KΩ | INF | .1Ω | 0Ω | INF | 0Ω | 10Meg | †225KΩ |
| V 11 | 6K6GT | INF | .1Ω | †2KΩ | †1.5KΩ | 470KΩ | INF | 0Ω | 680Ω | |
| V 12 | 12AU7 | †21KΩ | 1.8Meg | 0Ω | 0Ω | 0Ω | †42KΩ | 1.8Meg | 0Ω | .1Ω |
| V 13 | 6SN7GT | 6.8Meg | †5.8KΩ | 15KΩ | 2.4Meg | ¶1.5Meg | 0Ω | 0Ω | .1Ω | |
| V 14 | 6S4 | INF | 2.6KΩ | INF | .1Ω | 0Ω | 2.2Meg | INF | INF | ¶9KΩ |
| V 15 | 6AL5 | 4.8Meg | 4.8Meg | .1Ω | 0Ω | 6.8KΩ | 0Ω | 6.8KΩ | | |
| V 16 | 6SN7GT | 5.2Meg | ¶21KΩ | 1.5KΩ | 125KΩ | ¶165KΩ | 1.5KΩ | 0Ω | .1Ω | |
| V 17 | 6CD6G | INF | .1Ω | 100Ω | 470KΩ | 470KΩ | INF | 0Ω | †18KΩ | TOP CAP ¶14Ω |
| V 18 | 6W4GT | INF | INF | 200KΩ | INF | †560Ω | †560Ω | ¶6.5Ω | ¶6.5Ω | |
| V 19 | 1B3GT | PINS 1 - 8 HAVE INF RESISTANCE | | | | | | | | TOP CAP ¶300Ω |
| V 20 | 5U4G | INF | 13KΩ | INF | 20Ω | INF | 19Ω | INF | 13KΩ | |
| V 21 | 5U4G | INF | 13KΩ | INF | 19Ω | INF | 20Ω | INF | 13KΩ | |
| V 22 | 21EP4A | 0Ω | †19KΩ | PIN 10 ¶7.5KΩ | PIN 11 330KΩ | PIN 12 .1Ω | | | | |

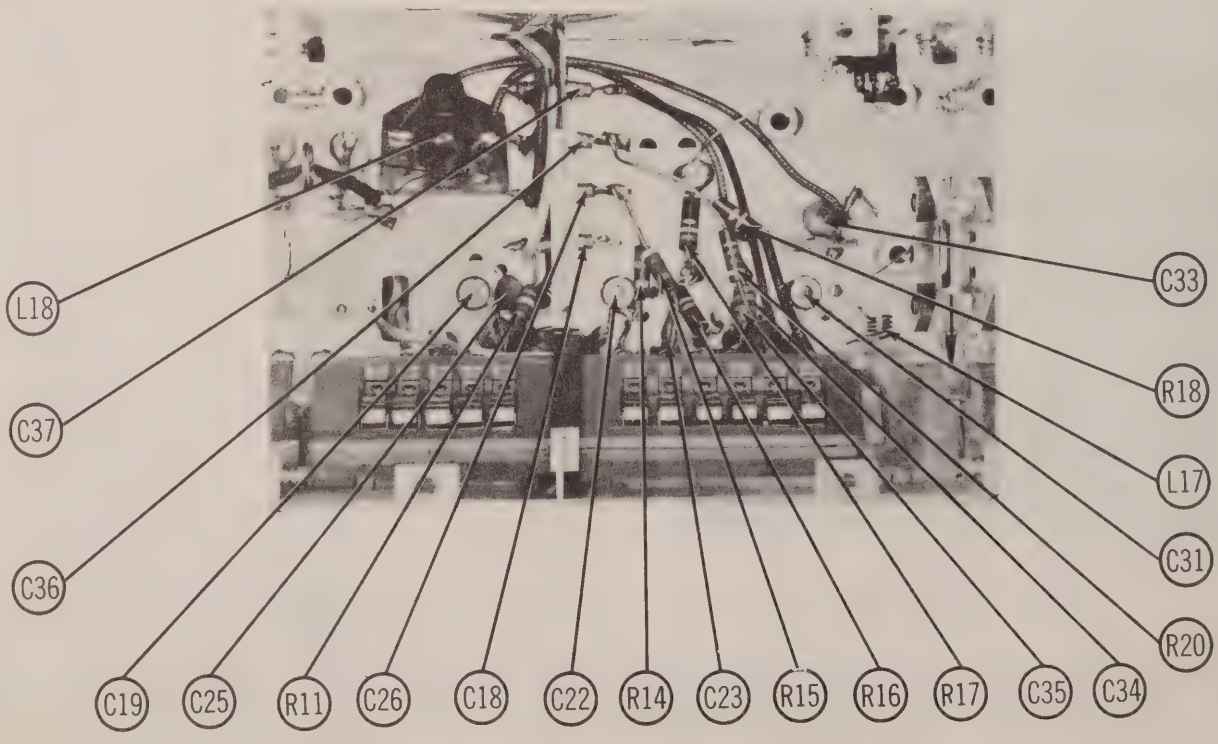
■ MEASURED IN UHF POSITION - ALL OTHERS IN VHF
† MEASURED FROM PIN 2 OF V20
¶ MEASURED FROM PIN 3 OF V18




# TUBE PLACEMENT CHART




**VHF TUNER-RIGHT SIDE**




**VHF TUNER-BOTTOM VIEW**

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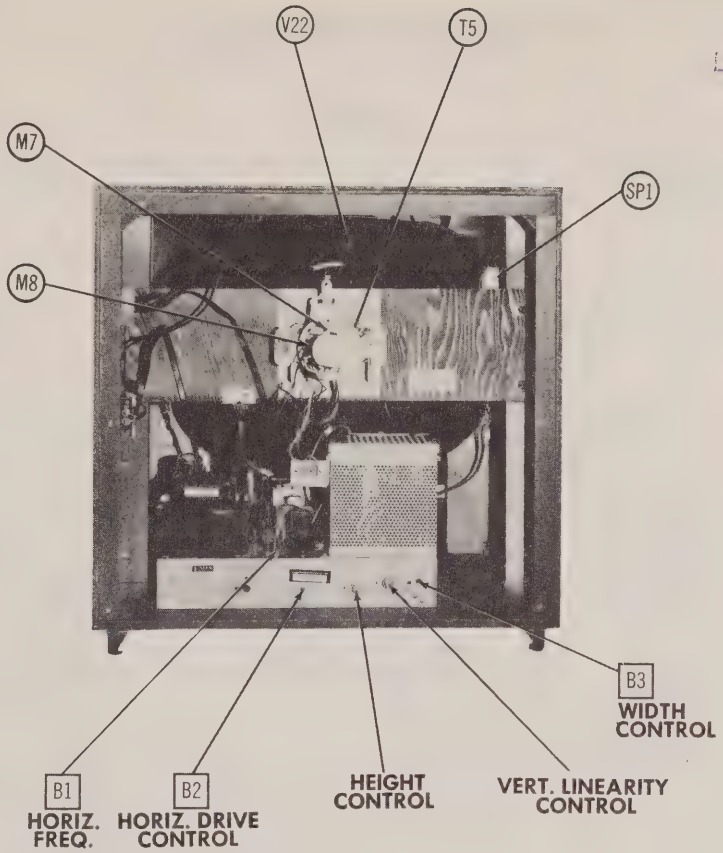



## CABINET—REAR VIEW

# HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

# TROUBLE SHOOTING AIDS

## SWEEP

### HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18, V20 and V21. Check adjustments B2, B3 and B4. Check waveform W13.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check R96, R97, C84, T3, T5A and other associated circuit components. | Check C81, C82, C83, C80, R90, R91, R93 and other associated components. |

DRIVE LINES

Check by substitution V16, V17 and V18. Check horizontal drive adjustment (B2). Check C81, C82, C85, C86, T3, T5A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V17 and V18. Check components associated with the horizontal output and damper stages especially T3, T5A, R96,R97,, C84, C85 and C86.

FOLDS

Follow procedure outlined under "Drive Lines".

XMAS TREE EFFECT

Substitute V16. Check C79, C80, L31 and other associated circuit components.

### VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform W8.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T4, T5B, R76 and other associated circuit components. | Check C73, T2, C72, R71, R73, R75 and other associated components. |

INSUFFICIENT SWEEP

Check by substitution V13 and V14. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check R73, R71, C72, C73 and other associated circuit components.

COMPRESSED AT TOP

Check by substitution V13 and V14. Check T4, T5B, C3C and other associated circuit components.

FOLDS

Check by substitution V13 and V14. Check components associated with these stages.

## SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Check by substitution V12 and V13. Check components associated with V12 and V13A.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V12 and V13. Check waveform W6.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check components associated with V13B. | Check vertical integrator network and other associated components. |

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check waveform W10.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check components associated with V16. | Check components associated with V13A and V15. |

HORIZONTAL BENDING

Check by substitution V15, V16 and V17. Check horizontal AFC network (C77, C78, R84 and R85) for change of value or failure.

## VIDEO

LOSS OF VIDEO

Check R40, R41, C55, picture tube and other associated circuit components.

SOUND BARS (4.5MC Beat)

Check fine tuning range and adjustment. Check adjustments A8 and A9. Check video IF alignment.

NEGATIVE PIX

Check by substitution V7 and V8. Check components associated with these stages especially the AGC network.

POOR CONTRAST (Strong signal areas)

Check by substitution V2, V4, V5, V6, V7 and V8. Check associated circuit components.

SMEAR

Check by substitution V7 and V8. Check C55, L27, R37, R38, R39, R40, R41, picture tube and other associated circuit components.for change of value or failure.

WIDE BLACK BAR ACROSS PIX

Check V2, V3, V4, V5, V6, V7 and V8 for heater to cathode leakage. In case of UHF, check V1.

## AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10 and V11. Check stages V10B and V11 using an audio signal generator. Apply audio signal across R51.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check ratio detector and audio IF alignment and components. | Check components associated with V10B and V11. |

BUZZ

Adjust A11 for minimum buzz. If buzz is still objectionable substitute V10 and realign audio section following procedure outlined in the alignment section.

DISTORTED

See "Weak or No Sound".

L. F. D. AINKLINSHIP
3924 MEADE ST.
DENVER, COLORADO




CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

FADA

MODELS UDL210OT, UH21T, U210OC, T, U215OC

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

| ITEM No. | USE | DC RES. PRI. | DC RES. SEC. | REPLACEMENT DATA FADA PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L1 | Ant. Coupling Loop | 0Ω | | | | | | |
| L2 | Ant. Coupling Loop | 0Ω | | | | | | |
| L3 | RF Coupling | 0Ω | | | | | | |
| L4 | Fil. Choke | 0Ω | | | | | | |
| L5 | Osc. Tank Coil | 0Ω | | | | | | |
| L6 | Osc. Tank Coil Shunt | 0Ω | | | | | | |
| L7 | Osc. Grid Coil | 0Ω CT | | | | | | |
| L8 | Osc. Harmonic Coupling | 0Ω | | | | | | |
| L9 | Osc. Doubler Coupling | 0Ω | | | | | | |
| L10 | RF Choke | .1Ω | | | | | | |
| L11 | UHF IF Output Coil | 0Ω | 0Ω | | | | | |
| L12 | Ant., RF Mixer Grid &Osc. Coils | 0Ω | | | | | | |
| L13 | 44MC UHF IF Strip | 0Ω | | | | | | |
| L14 | Neutr. Coil | 0Ω | | | | | | |
| L15 | Fil. Choke | 0Ω | | | | | | |
| L16 | Mixer Grid Coil | 0Ω | | | | | | |
| L17 | RF Choke | 0Ω | | | | | | |
| L18 | Conv. Plate | 0Ω | 0Ω | | | | | |
| L19 | 1st. Video IF | 0Ω | .1Ω | 37.276 | | | 6234 | |
| L20 | 2nd. Video IF | .2Ω | .2Ω | 37.277 | | | 6232 | Includes trap |
| L21 | Fil. Choke | 0Ω | | 37.89 | 19-3001 | TV-189 | 6175 | .6 Microhenry |
| L22 | 3rd. Video IF | .2Ω | .2Ω | 37.278 | | | 6233 | Includes trap |
| L23 | Fil. Choke | 0Ω | | 37.89 | 19-3001 | TV-189 | 6175 | .6 Microhenry |
| L24 | 4th. Video IF | .2Ω | .2Ω | 37.279 | | | 6234 | |
| L25 | Series Peaking Coil | 5Ω | | 37.234 | 19-3125 | | 6153 | 120 Microhenries |
| L26 | Shunt Peaking Coil | 18Ω | | 37.235 | 19-3660 | TV-188 | 4650 | 600 Microhenries |
| L27 | Series Peaking Coil | 6Ω | | 37-236 | 19-3180 * | TV-184 * | 6180 | 190 Microhenries, wound on 18KΩ resistor |
| L28 | Shunt Peaking Coil | 7.5Ω | | 37.237 | 19-3250 | TV-185 | 6181 | 245 Microhenries |
| L29 | Sound IF | 1.8Ω | 1.8Ω | 37.252 | 16-3445 † | TV-113 | 6203 | |
| L30 | Ratio Det. | 5.5Ω | 1.9ΩCT | 37.253 | 17-3497 | TV-115 | 6205 | Tertiary winding-.6Ω |
| L31 | Horiz. Osc. | 50Ω | | 37.233 | 19-1576 | TV-163 | 6210 | |

† Drill mounting holes.
* Parallel with 18KΩ resistor.

## FILTER CHOKE

| ITEM No. | RATINGS TOTAL DIRECT CURRENT | RATINGS D. C. RESISTANCE | RATINGS INDUCTANCE (0 CURRENT 1000 ~) | REPLACEMENT DATA FADA PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. |
|---|---|---|---|---|---|---|---|---|
| L32 | .250A | 60Ω | 1.5HY | 42.56 | C-2326 ① | C-2996 ① | TR-1733 ① | |

① Drill one new mounting hole.

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA FADA PART No. FUSE | FADA PART No. HOLDER | LITTELFUSE PART No. FUSE | LITTELFUSE PART No. HOLDER | BUSS PART No. FUSE | BUSS PART No. HOLDER |
|---|---|---|---|---|---|---|---|---|
| M1 | 3AG P/T | 1/4A | | | 318.250 (3AG P/T-1/4A) | | GJV 1/4 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | FADA PART No. | NOTES |
|---|---|---|---|
| M2 | Dial Light | | #47 |
| M3 | Tuner | 42.79 | UHF |
| M4 | Tuner | 42.78 | VHF |
| M5 | Crystal | | UHF Mixer G7B |
| M6 | Switch | | UHF-VHF Selector- Slide type activated with VHF selector |
| M7 | Focus Magnet | 112.38 | Includes centering arm & focus adj. cable |
| M8 | Ion Trap | 112.23 | |
| B2 | Trimmer Cap. | 132.18 | Horiz. Drive 25-280MMF |
| | Cabinet | 97.472 | Model UDL2100T |
| | Cabinet | 97.473 | Model U2100T |
| | Cabinet | 97.473FT | Model UH21T |
| | Cabinet | 97.360 | Models U2100C, U2150C |
| | Knob | 142.94 | Outer Shaft |
| | Knob | 142.93 | Inner Shaft |
| | Knob | 142.96 | Channel Selector Models UDL2100T, U2100T, UH21T |
| | Knob | 142.103 | Channel Selector Models U2100C, U2150C |
| | Knob | 142.98 | Fine tuning |
| | Knob | 142.97 | UHF Dial |
| | Knob | 142.95 | Brightness Models UH21T, U2150C |
| | Safety Glass | 92.533 | Models U2100T, UH21T |
| | Safety Glass | 92.537 | Models UDL2100T |
| | Safety Glass | 92.403 | Models U2100C, U2150C |
| | Control Panel | 97.482 | Model U2100T |
| | Control Panel | 97.512 | Model UH21T |

# TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

## POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If fialments light, substitute V20 and V21. Check B+ filter and decoupling components.

SMALL AND/OR DIM PIX

Substitute V20 and V21. Check B+ filter and decoupling components.

## HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M1. Check by substitution V16, V17, V18 and V19. Check waveform W13.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check R99, R100, C87, T3, T5A and other associated circuit components. | Check C80, C81, C82, R90, R91, R93 and other associated components. |

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18, V19, V20 and V21. Follow procedure outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V19, V18, V17, V16, V20 and V21. Check R99, R100, C87, T3, T5A, picture tube and other associated components.

## GENERAL

RASTER SOUND NO PIX

See "Loss of Video ".

RASTER NO SOUND NO PIX (VHF)

Check V2, V3, V4, V5, V6, V7 and V8. Check components associated with these stages.

RASTER NO SOUND NO PIX (UHF)

Check V1. It may be necessary to try several tubes to find one that will operate satisfactorily.

NO RASTER NO SOUND

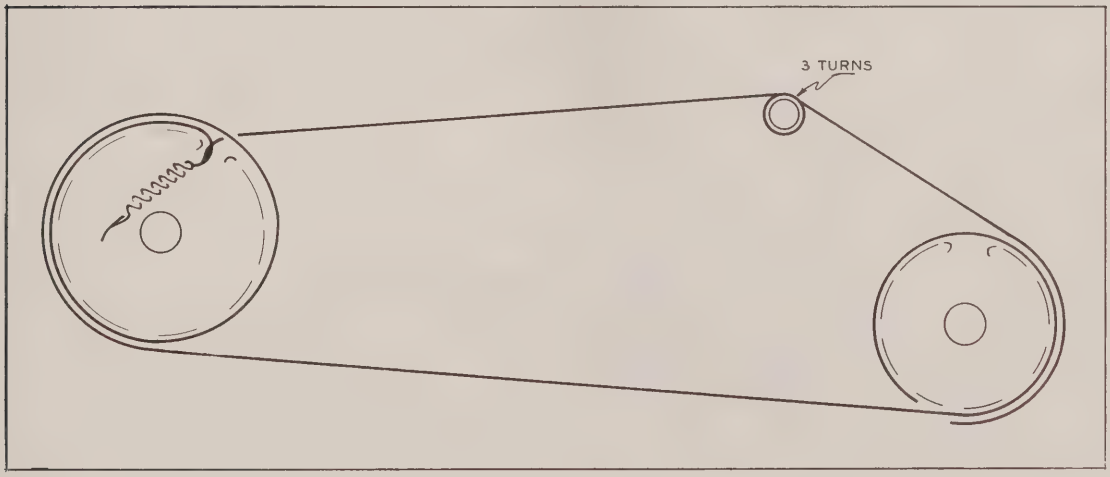
See "Dead Set".

INTERMITTENT STREAKS

Check video signal at W1 for interference pulses. Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.






## UHF DRIVE CORD STRINGING

# SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

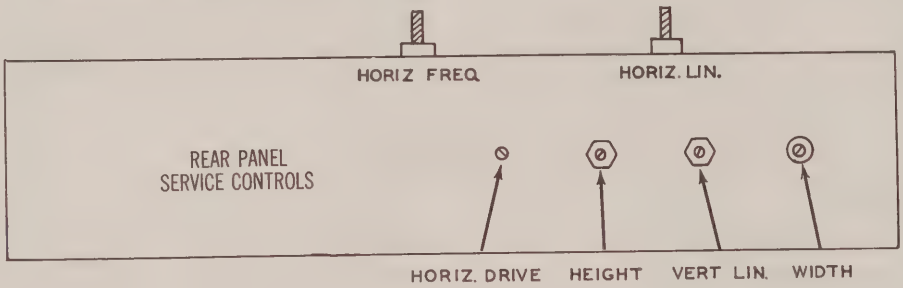
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove bracket at bottom of safety glass. Bracket is covered by a snap-on name plate. Pull name plate off to expose two screws holding bracket. Remove bracket and remove safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION




HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L31) until picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L30) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep protection. (For location, see tube placement chart).

CENTERING

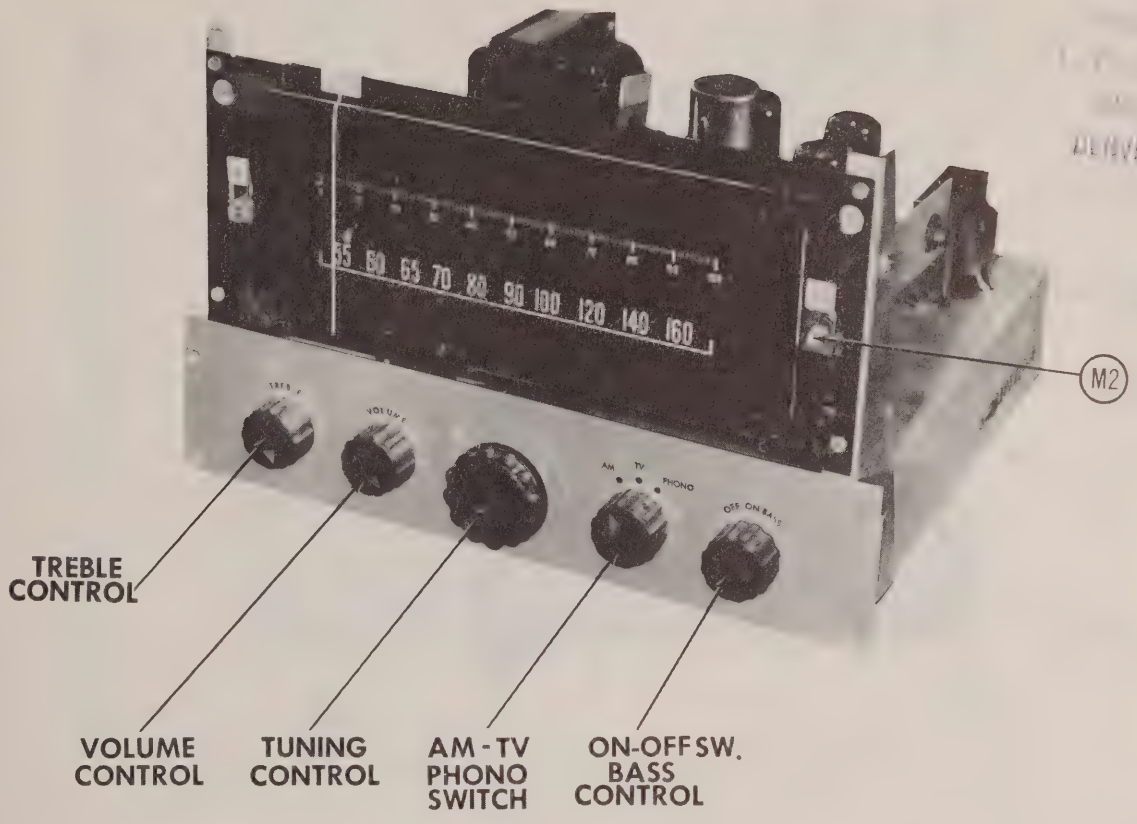
Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

# DISASSEMBLY INSTRUCTIONS

1. Remove 8 push on type control knobs from front panel.
2. Remove 9 wood screws. Remove rear cover.
3. Disconnect VHF & UHF built-in antennas, speaker, yoke plug, HV lead and CRT socket.
4. Remove 4 wood screws. Remove VHF & UHF antenna brackets.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

PROPERTY OF
U.S. GOVERNMENT
DENVER, COLORADO

MECK
MODEL 9030




MECK
MODEL 9030

| | |
|---|---|
| TRADE NAME | Meck Model 9030 |
| MANUFACTURER | John Meck Industries, Plymouth, Ind. |
| TYPE SET | AC Operated AM Superheterodyne Receiver |
| TUBES (Seven) | Types 6BE6 Conv., 6BA6 IF Amp., 6SQ7GT Det.-AVC-AF Amp., 6SN7GT Phase Inverter, (2) 6V6GT Audio Output, 5Y3GT Rectifier |
| POWER SUPPLY | 110-120 Volts AC-60 Cycle |
| RATING | .86 Amp. @117 Volts AC |
| TUNING RANGE—BROADCAST | 540-1600KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .01MFD | High side to antenna stator plates of tuning gang. Low side to chassis. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum deflection. |
| 2. | | Loop | 1600KC | 1600KC | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 600KC | 600KC | " | A6 | Remove tape from L1 and slide coil along ferrite rode to position where maximum deflection occurs. |
| 4. | | " | 1400KC | Tune to 1400KC signal | " | A6 | Adjust for maximum deflection. Repeat steps 3 and 4 to obtain a uniform sensitivity across tuning range. |

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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# PARTS LIST AND DESCRIPTIONS

MECK MODEL 9030

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA: MECK PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 6BE6 | 6BE6 | 7CH | |
| V2 | IF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V3 | Det-AVC-AF-Amp. | 6SQ7 | 6SQ7 | 8Q | |
| V4 | Phase Inverter | 6SN7GT | 6SN7GT | 8BD | |
| V5 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V6 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V7 | Rectifier | 5Y3GT | 5Y3GT | 5T | |

## CAPACITORS

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: MECK PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ▬40 | 450 | | AFH4-79 | | BO45 | | FP447 | TVL-3786 | |
| B | ■20 | 450 | | | | BR2045A | | | | |
| C | ▲40 | 450 | | | | | | | | |
| C2 | .1 | 600 | | P688-1 | DF-104 | PTE6P1 | | PT601 | 6TM-P1 | |
| C3 | 50 | | | SI50 | D6-500 | TM5Q5 | GP1K-500 | UC-545 | 5GA-Q5 | |
| C4 | 5000 | | | BPD-005 | D6-502 | TM5D5 | GP2-333-502 | DC-525 | 5HK-D5 | |
| C5 | 5000 | | | BPD-005 | D6-502 | TM5D5 | GP2-333-502 | DC-525 | 5HK-D5 | |
| C6A | 100 | | | BPD-0001 | D6-101 | TM5T1 | GP1K-101 | UC-531 | 5GA-T1 | |
| B | 100 | | | BPD-0001 | D6-101 | TM5T1 | GP1K-101 | UC-531 | 5GA-T1 | |
| C7 | .001 | 600 | | P688-001 | D6-102 | PTE6D1 | GP2L-102 | PT621 | 6TM-D1 | |
| C8 | 390 | 500 | | SI390 | D6-391 | | GP2K-391 | UC-5339 | 5GA-T39 | |
| C9 | .01 | 600 | | P688-01 | D6-103 | PTE6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C10 | 100 | | | SI100 | D6-101 | TM5T1 | GP1K-101 | UC-531 | 5GA-T1 | |
| C11 | .1 | 600 | | P688-1 | DF-104 | PTE6P1 | | PT601 | 6TM-P1 | |
| C12 | .1 | 600 | | P688-1 | DF-104 | PTE6P1 | | PT601 | 6TM-P1 | |
| C13 | .005 | 600 | | P688-005 | D6-502 | PTE6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C14 | .01 | 600 | | P688-01 | D6-103 | PTE6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C15 | .005 | 600 | | P688-005 | D6-502 | PTE6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C16 | .02 | 600 | | P688-02 | DD-203 | PTE6S2 | | PT612 | 6TM-S2 | |
| C17 | .05 | 200 | | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C18 | .05 | 600 | | P688-05 | DF-503 | PTE6S5 | | PT615 | 6TM-S5 | |
| C19 | .05 | 200 | | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C20 | 330 | 500 | | SI330 | D6-331 | | GP2K-331 | UC-5333 | 5GA-T33 | Note 1 |
| C21 | 330 | 500 | | SI330 | D6-331 | | GP2K-331 | UC-5333 | 5GA-T33 | Note 1 |
| C22 | 5000 | | | BPD-005 | D6-502 | TM5D5 | GP2-333-502 | DC-525 | 5HK-D5 | |
| C23 | 5000 | | | BPD-005 | D6-502 | TM5D5 | GP2-333-502 | DC-525 | 5HK-D5 | |

Note 1. Some Models use a 430MMF in this application

## CONTROLS

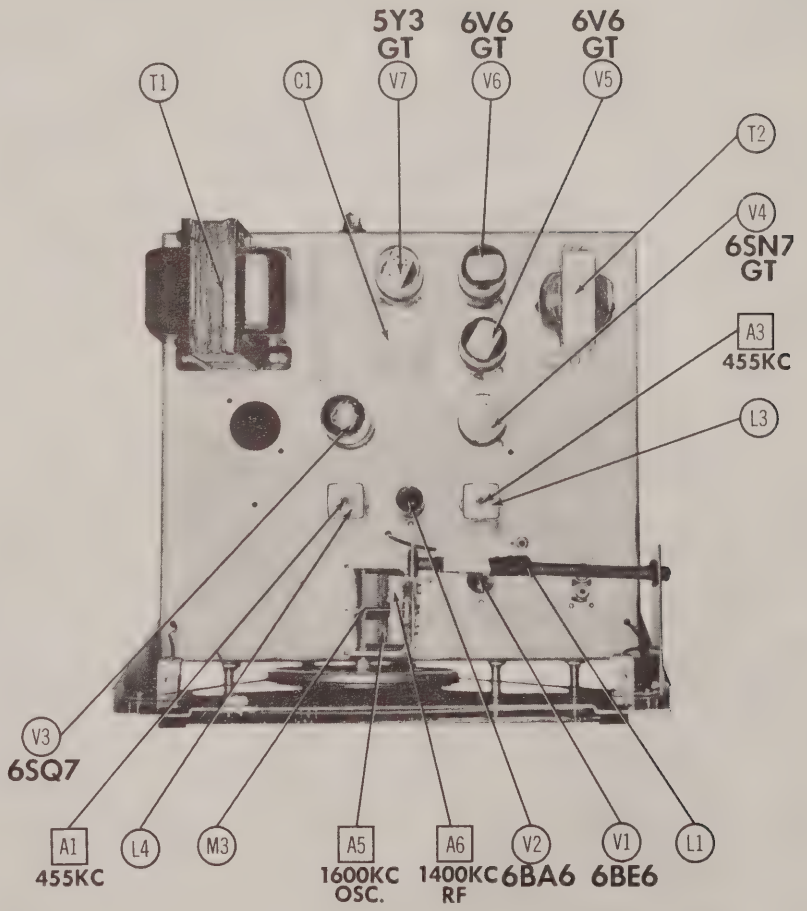
| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: MECK PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500KΩ | ½ | 70V4584 | Q11-133 | AQ-58-S | B-59 | U-50 | Treble |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| R2A | 500KΩ | ½ | VCA11110 | Q17-133 | | B-61 | U-48 | Volume |
| R3A | 500KΩ | ½ | VCA11112 | Q11-133 | AG-58-S | B-59-S | U-50 | Bass |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R3A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R3A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: MECK PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R4 | 22KΩ | ½ | | BTS-22K | |
| R5 | 1000Ω | ½ | | BTS-1000 | |
| R6 | 1000Ω | ½ | | BTS-1000 | |
| R7 | 82Ω | ½ | | BTS-82 | |
| R8 | 1Meg | ½ | | BTS-1Meg | |
| R9 | 22KΩ | ½ | | BTS-22K | |
| R10 | 100KΩ | ½ | | BTS-100K | |
| R11 | 100Ω | ½ | | BTS-100K | |
| R12 | 56KΩ | ½ | | BTS-560K | Note 2 |
| R13 | 47KΩ | ½ | | BTS-47K | |
| R14 | 22KΩ | ½ | | BTS-22K | |
| R15 | 4.7Meg | ½ | | BTS-4.7Meg | |
| R16 | 47KΩ | ½ | | BTS-47K | |
| R17 | 10KΩ | ½ | | BTS-10K | |
| R18 | 100KΩ | ½ | | BTS-100K | |
| R19 | 2200Ω | ½ | | BTS-2200 | Note 1 |
| R20 | 1500Ω | ½ | | BTS-1500 | |
| R21 | 10KΩ | 1 | | BTS-10K | |
| R22 | 15KΩ | 1 | | BTS-15K | |
| R23 | 220KΩ | ½ | | BTS-220K | |
| R24 | 220KΩ | 1 | | BTA-220K | |
| R25 | 270Ω | 2 | | | |
| R26 | 220KΩ | 1 | | BTA-220K | |
| R27 | 470Ω | 2 | | BTB-470 | |
| R28 | 470Ω | 2 | | BTB-470 | |
| R29 | 2500Ω | 15 | 70U4814 | 2D-2500 | |
| R30 | 2.2KΩ | ½ | | BTS-2.2K | Note 1 |
| R31 | 270Ω | 2 | | | Note 1 |

Note 1. Not used in all models.
Note 2. Some models may use a 470KΩ resistor in this application.

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | MECK PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. |
| T1 | 117VAC @ .86A | 604VCT .140ADC | 5VAC @ 2A | 6.3VAC @ 2.52A | TP-10021 | | | PV-120 ① ② | |

① Drill new mounting holes.
② Tape center tap on 6.3V winding.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | MECK PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T2 | 3.8KΩ CT | 3 to 4Ω | 400Ω CT | .25Ω | TOB-10059 | A-3830 | A-2936 ① | RO-302 ① | S-19Z ① | ① Drill one new mounting hole. |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | MECK PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coil | 1.3Ω | | ALA-10032A | | | | |
| L2 | Osc. Coil | 6Ω | | TRC-10026 | | | 71-Osc. | Tapped @ .5Ω |
| L3 | Input IF | 15Ω | 14Ω | TSA-10058 | 16-6666 * | BC-368 * | 1312-C1 * | |
| L4 | Output IF | 15Ω | 14Ω | TSA-10058 | 16-6667 | BC-371 * | 1312-C4 * | |

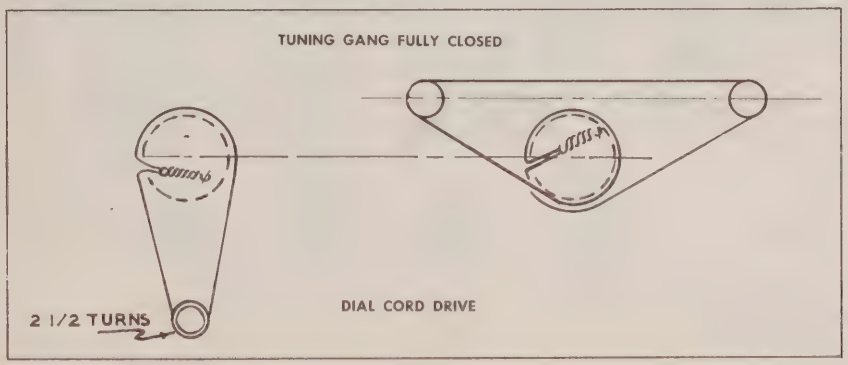
* Drill one new mounting hole.

## FUSES

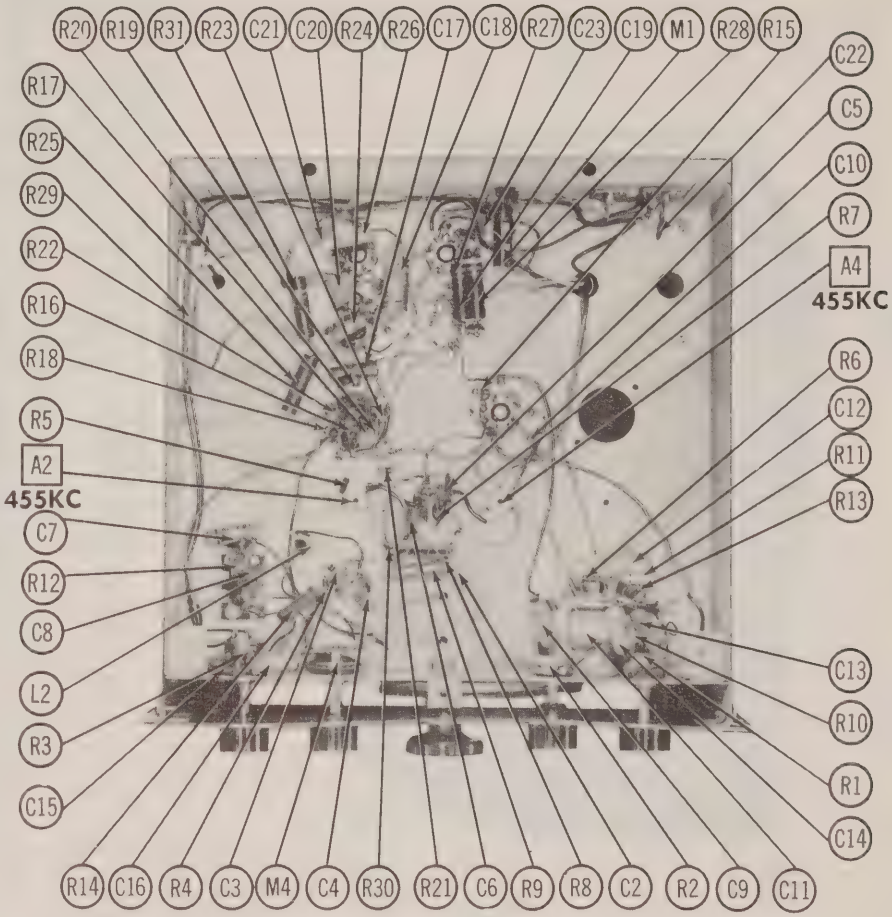
| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | MECK PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG | 3A 250V | FA-10000 | | 312003 (3AG-3A) | 342001 | AGC-3 | HKP |

## MISCELLANEOUS

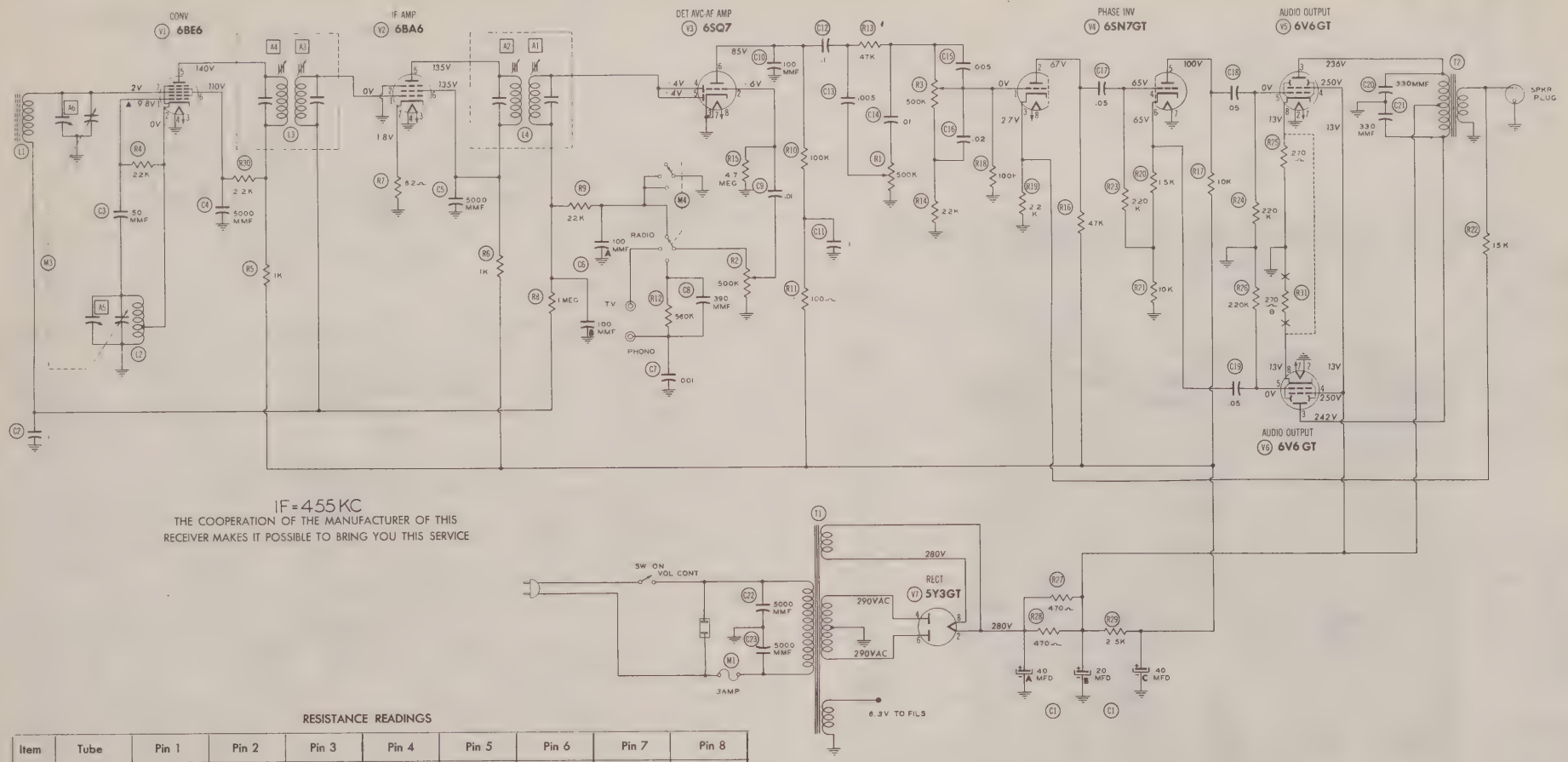
| ITEM No. | PART NAME | MECK PART No. | NOTES |
|---|---|---|---|
| M2 | Dial Light | DB-10000 | Type #47-2used |
| M3 | Tuning cap | CVB-10028 | 2 gang (39-462MMF, 30-195MMF) |
| M4 | Switch | VSA-10021A | Function selector - 3 position |
| | Knob | KA-10131 | Brown-red arrow 4 used |
| | Knob | KA-10130 | Brown-tuning |
| | Dial glass | DSB-10119 | With dial Calibrator |




# CHASSIS—BOTTOM VIEW




PROPERTY OF
L. F. HAWKENSHIP
3901 QUADE ST.
DENVER, COLORADO




IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BE6 | 22KΩ | 3Ω | .1Ω | 0Ω | †3.7KΩ | †5.9KΩ | 1.5Meg | |
| V 2 | 6BA6 | 1.5Meg | 0Ω | .1Ω | 0Ω | †3.7KΩ | †3.7KΩ | 82Ω | |
| V 3 | 6SQ7 | 0Ω | 4.7Meg | 0Ω | 500KΩ | 500KΩ | †200KΩ | 0Ω | .1Ω |
| V 4 | 6SN7GT | 60KΩ | †50KΩ | 2.1KΩ | 230KΩ | †12.7KΩ | 11.5KΩ | 0Ω | .1Ω |
| V 5 | 6V6GT | 0Ω | 0Ω | †435Ω | †235Ω | 220KΩ | 11.5KΩ | .1Ω | 270Ω |
| V 6 | 6V6GT | 0Ω | 0Ω | †435Ω | †235Ω | 220KΩ | †12.7KΩ | .1Ω | 270Ω |
| V 7 | 5Y3GT | INF | 100KΩ | INF | 75Ω | INF | 82Ω | INF | 100KΩ |

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 2 OF V7

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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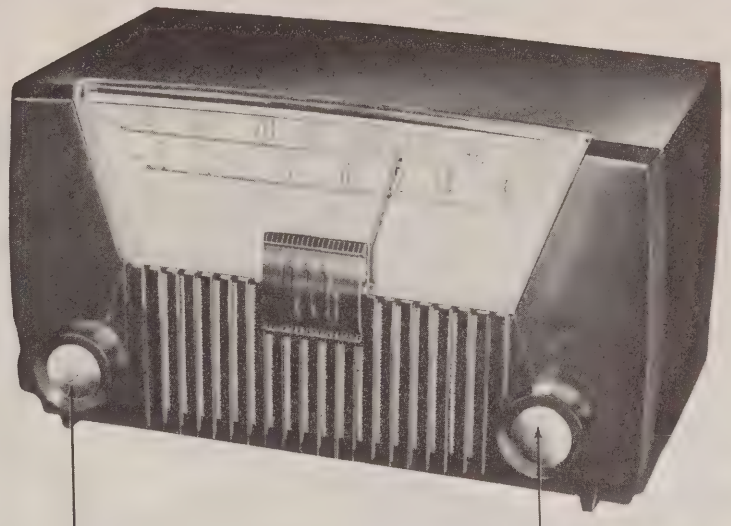
228-11

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

# MOTOROLA
# MODEL 62X21 (Ch. HS-326)

MOTOROLA
MODEL 62X21 (Ch. HS-326)




PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MOTOROLA
MODEL 62X21 (Ch. HS-326)

| | |
|---|---|
| TRADE NAME | Motorola Model 62X21 (Ch. HS-326) |
| MANUFACTURER | Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill. |
| TYPE SET | AC/DC Operated Two Band AM Superheterodyne Receiver |
| TUBES (Six) | Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier |
| POWER SUPPLY | 110-120 Volts AC-DC — RATING .25 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 535 - 1620KC — SHORT WAVE 6-16MC |

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Align the broadcast band before attempting short wave alignment as broadcast trimmer adjustments affect the short wave alignment.

To set dial pointer, turn tuning gang fully closed and set pointer on index line on lower left side of dial scale.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to RF stator lug. Low side to B-. | 455KC (400~Mod) | BC | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2. | " | High side to RF stator lug. Low side to B-. | 1600KC | " | 1600KC | " | A5, A8 | Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation. |
| 3. | " | " | 600KC | " | 600KC | " | A6 | Adjust for maximum deflection while rocking tuning gang. |
| 4. | | Loop | 1500KC | " | 1500KC | " | A7 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 5. | 400Ω | High side to short wave antenna terminal. Low side to B-. | 16MC | SW | 16MC | Use VTVM. DC probe to junction of C10 and R5. Common to B-. | A9, A10 | Disable oscillator by shorting center section of tuning gang. Set generator for maximum output. Adjust for maximum deflection. |
| 6. | " | " | " | " | " | " | A11 | Reduce generator output to approximately 25 microvolts. Adjust for maximum deflection which will occur at first peak on VTVM. If the oscillator adjustment is correct an image frequency should occur at 16.91MC. |

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# PARTS LIST AND DESCRIPTIONS

MOTOROLA
MODEL 62X21 (Ch. HS-326)

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA: MOTOROLA PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V2 | Converter | 12BE6 | 12BE6 | 7CH | |
| V3 | IF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V4 | Det-AVC-AF Amp. | 12AT6 | 12AT6 | 7BT | |
| V5 | Audio Output | 35C5 | 35C5 | 7CV | |
| V6 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: MOTOROLA PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 50 | 150 | 23B620847 | PRS150/50-50 | | XC-003 | | 3N540 | TVA-2453 | Red |
| B | 50 | 150 | | | | | | | TVA-1414 | Blue |
| C | 50 | 150 | | PRS150/50 | | | | | | Yellow |
| C2 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C3 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C4 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C5 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C6 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C7 | 220 | 500 | 21R6613 | | D6-221 | | GP2K-221 | UC-5322 | 5GA-T22 | |
| C8 | 1.5 | | 21R115959 | | | | | | | |
| C9 | 1.5 | | 21R115959 | | | | | | | |
| C10 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C11 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C12 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C13 | 5.6 | | 21R120156 | | | | | | | |
| C14 | 1800 | 500 | 21R120217 | | D6-182 | | GP2-333-182 | UC-5218 | 5GA-D18 | |
| C15 | 47 | | 21R6513 | | TCZ-47 | | NP0K-470 | NT-5447 | 5TCU-Q47 | |
| C16 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C17 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C18 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C19 | 220 | | 21R115854 | SI220 | D6-221 | | GP2K-221 | UC-5322 | 5GA-T22 | |
| C20 | .01 | 400 | 21R482726 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C21 | .047 | 400 | 8R490987 | P488-047 | DF-503 | PTE4S47 | | PT4147 | 4TM-S47 | |
| C22 | 5000 | | 21R115312 | BPD-005 | D6-502 | TM5D5 | 811-005 | DC-525 | 5HK-D5 | |
| C23 | .01 | 400 | 8R9858 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C24 | 220 | | 21R115854 | SI220 | D6-221 | | GP2K-221 | UC-5322 | 5GA-T22 | |
| C25 | .01 | 400 | 8R9858 | P488-01 | D6-103 | PTE4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C26 | .02 | 400 | 8R9802 | P488-02 | DD-203 | PTE4S2 | | PT412 | 4TM-S2 | |
| C27 | .047 | 400 | 8R490987 | 489ZX-047 | | PJ4S5 | | PT4147 | 4TM-S47 | |
| C28 | .1 | 400 | 21R482726 | 489ZX-1 | | PJ4P1 | | PT401 | 4TM-P1 | |
| C29 | 10000 | | 21R482726 | BPD-01 | DD-1032 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |

## CONTROLS

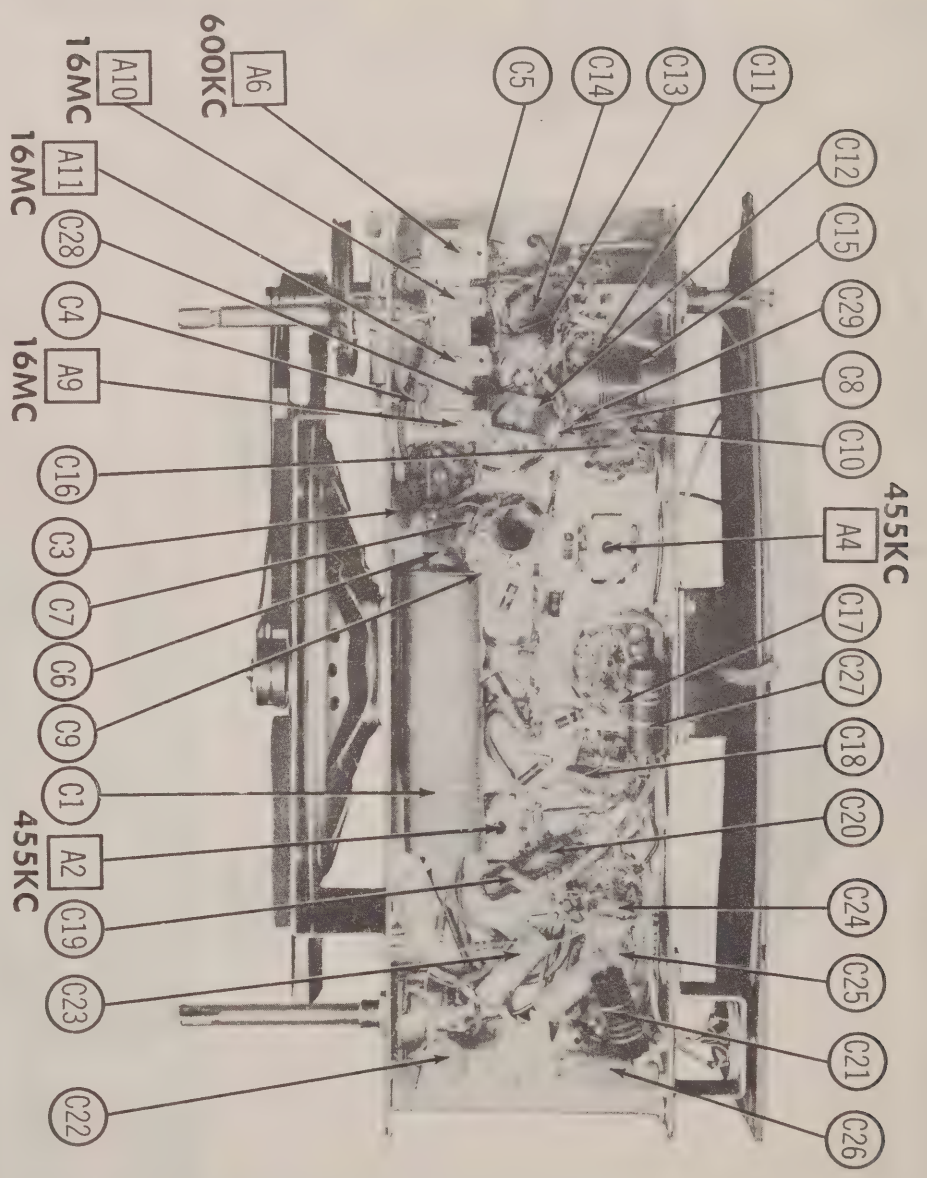
| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: MOTOROLA PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 1Meg | ½ | 18K611039 | Q13-137X | AK-98 | ABT-73 | UT-438 | Volume-Tapped @ 300KΩ |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | AK-4 | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | KB-1 | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: MOTOROLA PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 100KΩ | ½ | 6R6075 | BTS-100K | |
| R3 | 330Ω | ½ | 6R6022 | BTS-330 | |
| R4 | 10KΩ | ½ | 6R6054 | BTS-10K | |
| R5 | 3.3Meg | ½ | 6R2118 | BTS-3.3Meg | |
| R6 | 22KΩ | ½ | 6R6028 | BTS-22K | |
| R7 | 100Ω | ½ | 6R6326 | | |
| R8 | 1000Ω | ½ | 6R6301 | BTS-1000 | |
| R9 | 330Ω | ½ | 6R6022 | BTS-330 | |
| R10 | 1Meg | ½ | 6R6004 | BTS-1Meg | |
| R11 | 470KΩ | ½ | 6R6032 | BTS-470K | |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: MOTOROLA PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R12 | 47KΩ | ½ | 6R6056 | BTS-47K | |
| R13 | 33KΩ | ½ | 6R6012 | BTS-33K | |
| R14 | 10Meg | ½ | 6R2109 | BTS-10Meg | |
| R15 | 470KΩ | ½ | 6R6032 | BTS-470K | |
| R16 | 470KΩ | ½ | 6R6032 | BTS-470K | |
| R17 | 150Ω | ½ | 6R3992 | BTS-150 | |
| R18 | 27Ω | ½ | 6R5683 | | |
| R19 | 1000Ω | 1 | 6R953 | BTA-1000 | |

## CHASSIS—BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | MOTOROLA PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T1 | 2.3KΩ | 3.2Ω | 194Ω | .52Ω | 25B482858-R | A-3332 | A-3025 | RO-2 ① | S-1X ① | ① Drill one new mounting hole. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | MOTOROLA PART No. | VIKING PART No. | QUAM PART No. | |
| SP1 | 4 x 6" | PM | 3.2Ω | 50C611019 | 46J6 | 46A07 | |

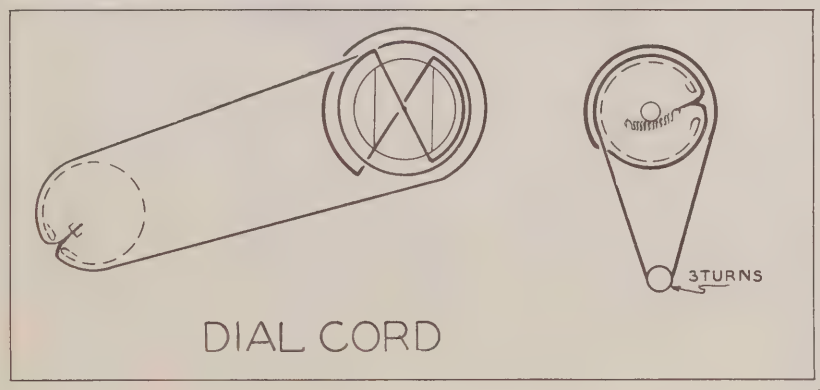
## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | MOTOROLA PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | SW Ant. Coil | 0Ω | .1Ω | 24B621364 | | | *C-5495-A | Includes cabinet back |
| L2 | BC Loop Ant. | 3.9Ω | | 24C621341 | | | | |
| L3 | SW RF Coil | 8Ω | .1Ω | 24B621366 | | | *C-5495-RF | |
| L4 | BC RF Coil | 11Ω | 7.5Ω | 24B621363 | 14-1027 * | BC-382 * | 70-RF | |
| L5 | RF Choke | 0Ω | | 24A721274 | | | | |
| L6 | RF Choke | 0Ω | | 24A630033 | | | | |
| L7 | SW Osc. Coil | 0Ω | .1Ω | 24B621365 | | | | |
| L8 | BC Osc. Coil | .9Ω | 9Ω | 24A621367 | 14-1028 * | BC-381 † | 70-osc.▲ | |
| L9 | Input IF | 20Ω | 20Ω | 24C485553 | 16-6758 | BC-352 | 12-C1 | |
| L10 | Output IF | 20Ω | 20Ω | 24C485553 | 16-6758 | BC-353 | 12-C2 | |

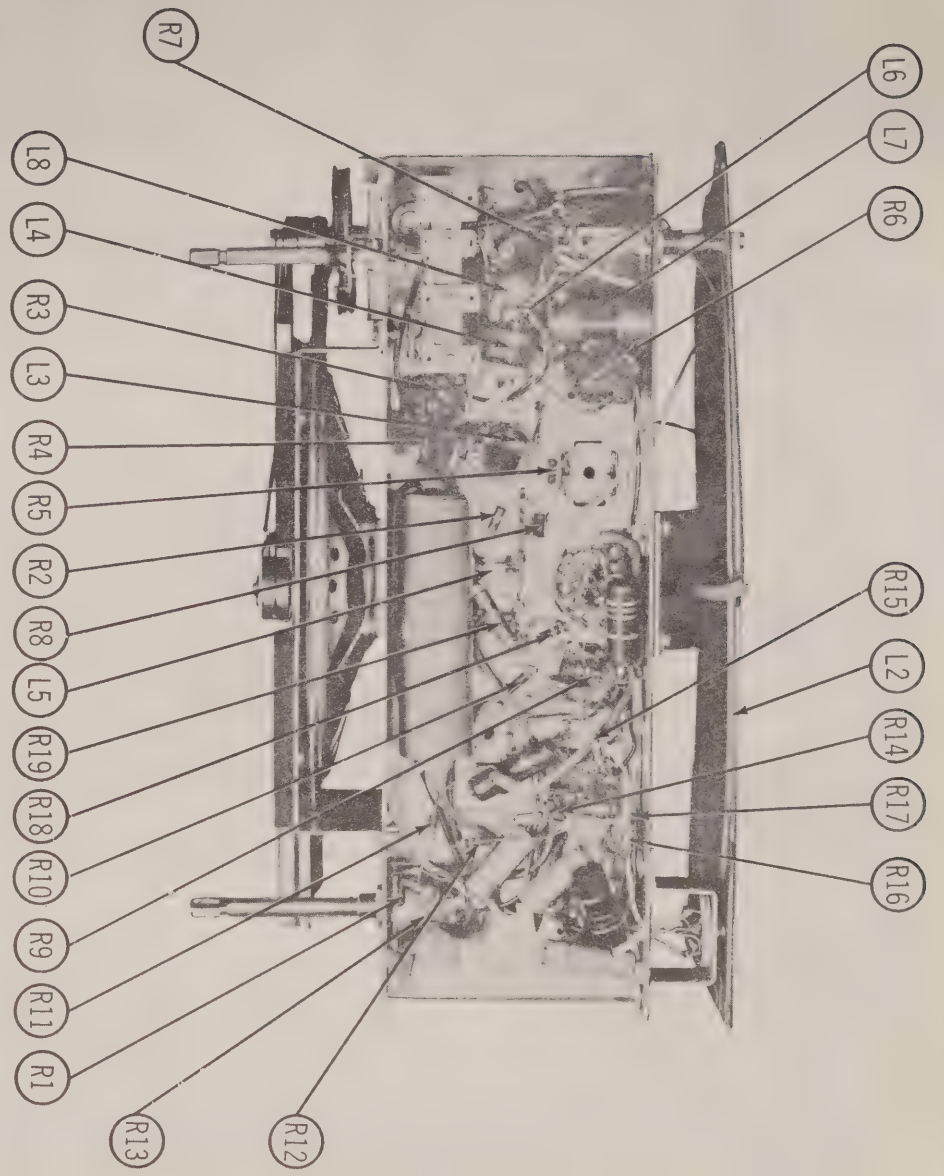
* Drill mounting hole.
† Drill mounting hole and disregard tap on secondary winding.
▲ Disregard tap on secondary winding.

## MISCELLANEOUS

| ITEM No. | PART NAME | MOTOROLA PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning capacitor | 19C621347 | 13-735MMF, 13-375MMF, 13-375MMF |
| M2 | Switch | 40K621356 | Broadcast-shortwave selector |
| A10 | Trimmer capacitor | 20K622121 | 4-35MMF, antenna (SW), (Less bracket) |
| A9, A11 | Trimmer capacitor | 20K622122 | 2-25MMF, RF (SW), oscillator (SW), (2 used), less bracket. |
| A6 | Trimmer capacitor | 20K621607 | 300-450MMF, oscillator padder (BC), (Less bracket) |
| | Cabinet | 16K621358 | (Less grille and dial glass) |
| | Dial Glass | 61K621370 | |
| | Grille | 13A611181 | |
| | Pointer | 1V620123 | (with tubing) |
| | Scale | 34C621342 | |
| | Knob | 36B611132 | Off-on-volume and tuning (2 used) |
| | Knob | 36A621357 | Broadcast-shortwave selector |

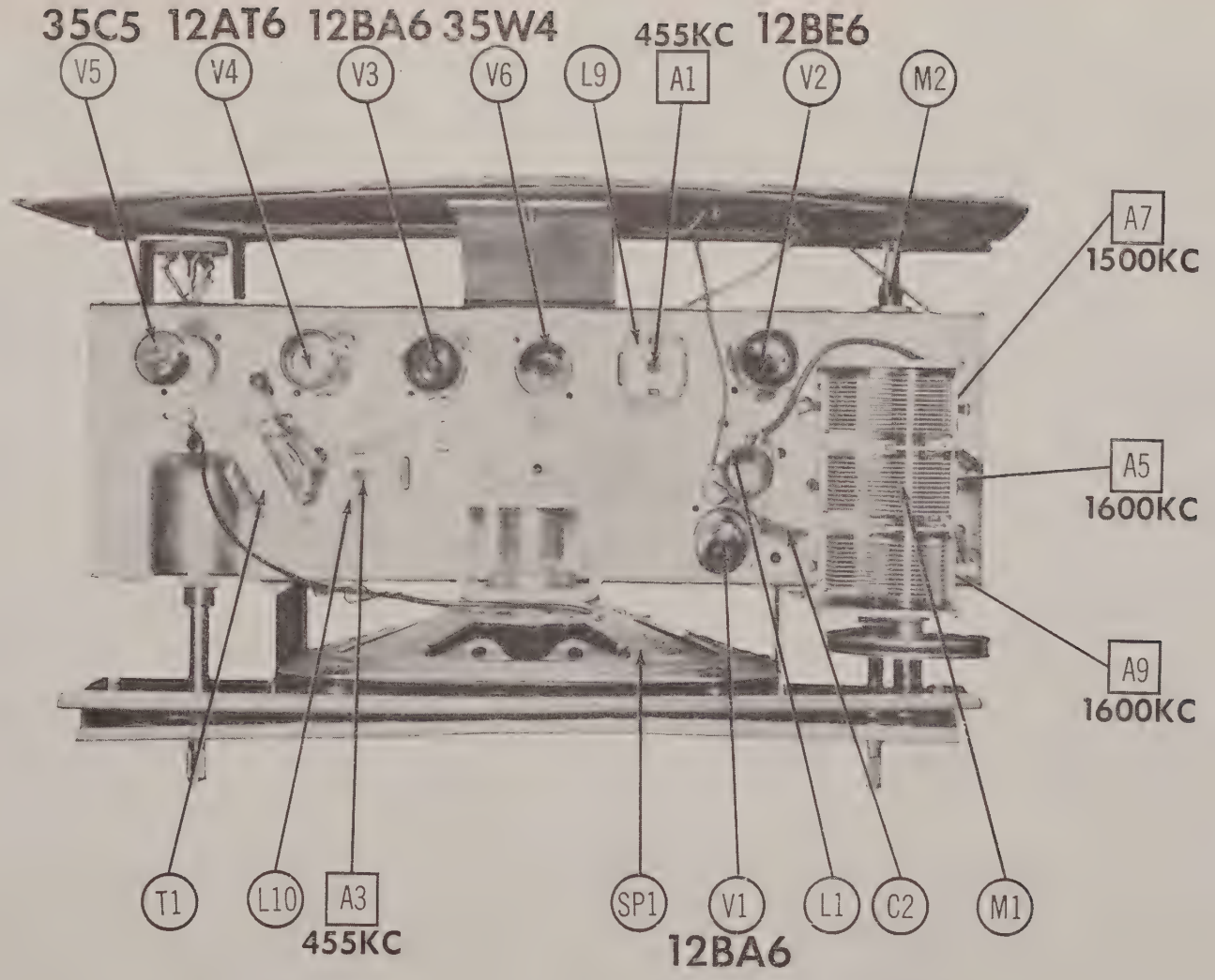


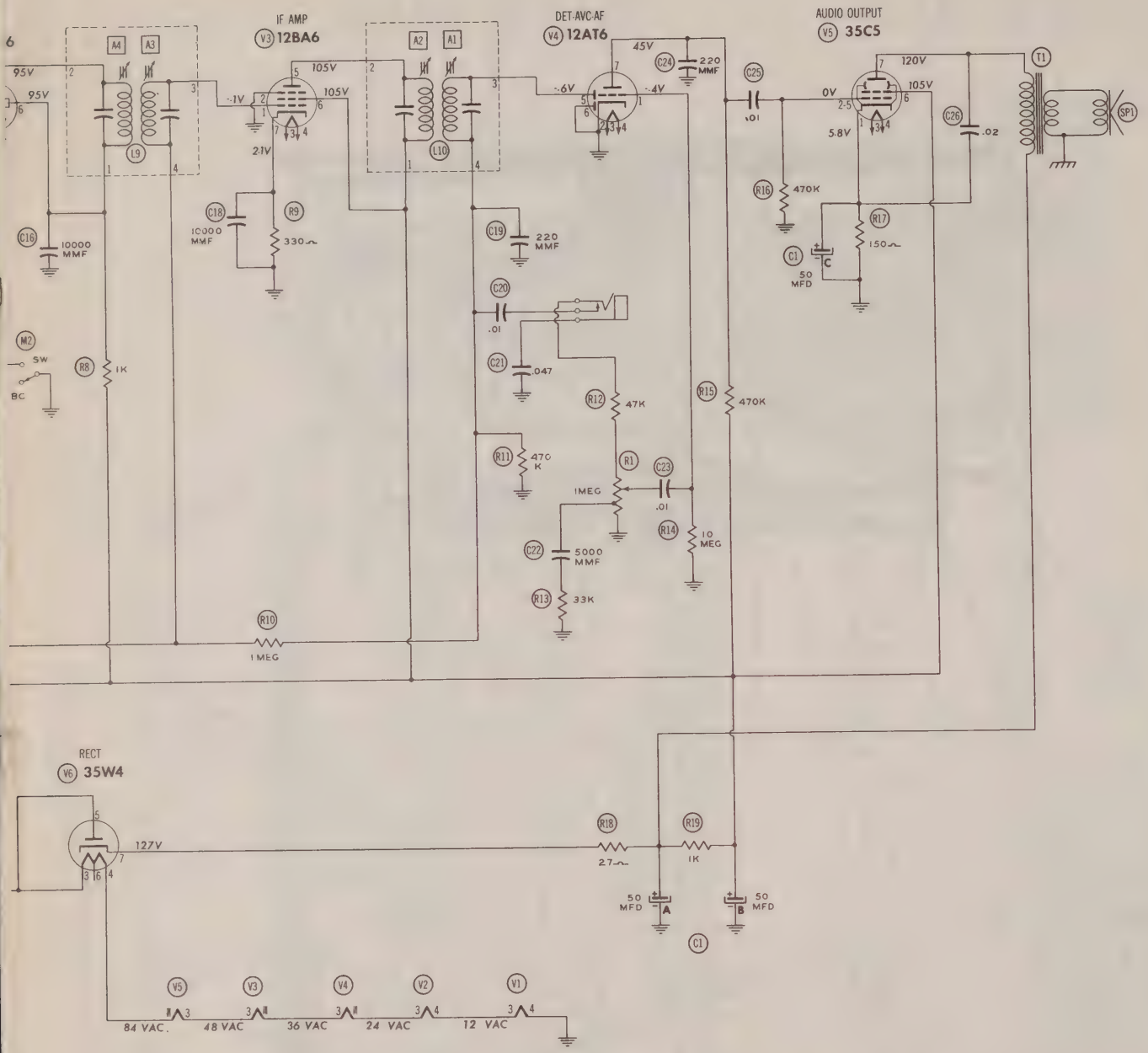

## CHASSIS—BOTTOM VIEW





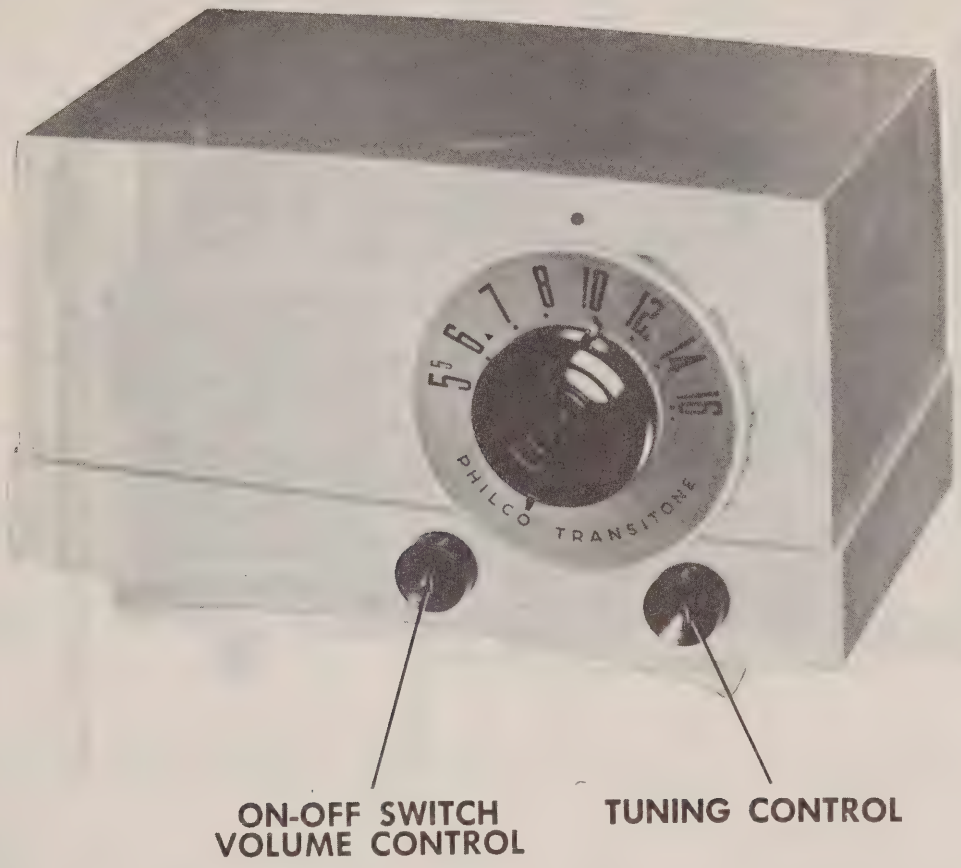

MOTOROLA MODEL 62X21 (Ch. HS-326)


35C5
12AT6
12BA6
35W4
455KC
12BE6
V5
V4
V3
V6
L9
A1
V2
M2
A7
1500KC
A5
1600KC
A9
1600KC
T1
L10
A3
455KC
SP1
V1
L1
C2
M1
12BA6




1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

PHILCO
MODEL B570 (Code 121)




ON-OFF SWITCH
VOLUME CONTROL

TUNING CONTROL

PHILCO
MODEL B570 (Code 121)

| | |
|---|---|
| TRADE NAME | Philco Model B570 (Code 121) |
| MANUFACTURER | Philco Corp., Tioga & "C" Sts., Philadelphia, Pa. |
| TYPE SET | AC-DC Operated AM Superheterodyne Receiver |
| TUBES (Five) | Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier |
| POWER SUPPLY | 105-120 Volts AC-DC RATING .23 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 540-1620KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B- Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 7 (grid) of 12BE6 (V1) Low side to B-. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2. | | Loop | 1620KC | " | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 1500KC | " | " | A6 | " |

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# PARTS LIST AND DESCRIPTIONS

PHILCO
MODEL B570 (Code 121)

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA: PHILCO PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 12BE6 | 12BE6 | 7CH | |
| V2 | IF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V3 | Det-AVC-AF-Amp. | 12AV6 | 12AV6 | 7BT | |
| V4 | Audio Output | 35C5 | 35C5 | 7CV | |
| V5 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: PHILCO PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 30 | 150 | 30-2575-34 | PRS150/30-30-30 | | BBRT-32-V215 | | 3N534 | TVA-3444 | Orange |
| B | 25 | 150 | | | | | | | | Red |
| C | 20 | 150 | | | | | | | | Blue |
| C2 | .05 | 200 | 45-3505-28 | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C3 | 47 | | 30-1230-4 | SI47 | D6-470 | | GP1K-470 | UC-5447 | 5GA-Q47 | |
| C4 | 7.5 | | 30-1224-83 | | | | | | | |
| C5 | .05 | 200 | 45-3505-28 | P288-05 | DF-503 | PTE4S5 | | PT415 | 2TM-S5 | |
| C6 | 5000 | | 30-1238-1 | BPD-005 | D6-502 | TM5D5 | GP2-333-502 | DC-525 | 5HK-D5 | |
| C7A | ♦ | | ♦30-6001 | ♦PA-112-1 | ♦PC-70 | | ♦1406-01 | | ♦104C4 | |
| B | 5000 | | | | | | | | | |
| C | ♦ | | | | | | | | | |
| C8 | .022 | 400 | 45-3505-43 | P488-022 | | PTE4S22 | | PT4122 | 4TM-S22 | |
| C9 | .047 | 400 | 30-4650-45 | P488-047 | | PTE4S47 | | PT4147 | 4TM-S47 | |
| C10 | .1 | 400 | 45-3505-47 | P488-1 | | PTE4P1 | | PT401 | 4TM-P1 | |

♦ Items C7A, C7B, C7C, R7A, R7B are combined in one unit.
When used separately, C7A and C7C should total 250MMF.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: PHILCO PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500KΩ | ½ | 33-5566-41 | Q13-133 | AG-60-Z | B-60-S | U-48 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: PHILCO PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 22KΩ | ½ | 66-3228340 | BTS-22K | |
| R3 | 4700Ω | ½ | 66-2478340 | BTS-4700 | |
| R4 | 2.2Meg | ½ | 66-5228340 | BTS-2.2Meg | |
| R5 | 47KΩ | ½ | 66-3478340 | BTS-47K | |
| R6 | 10Meg | ½ | 66-6108340 | BTS-10Meg | |

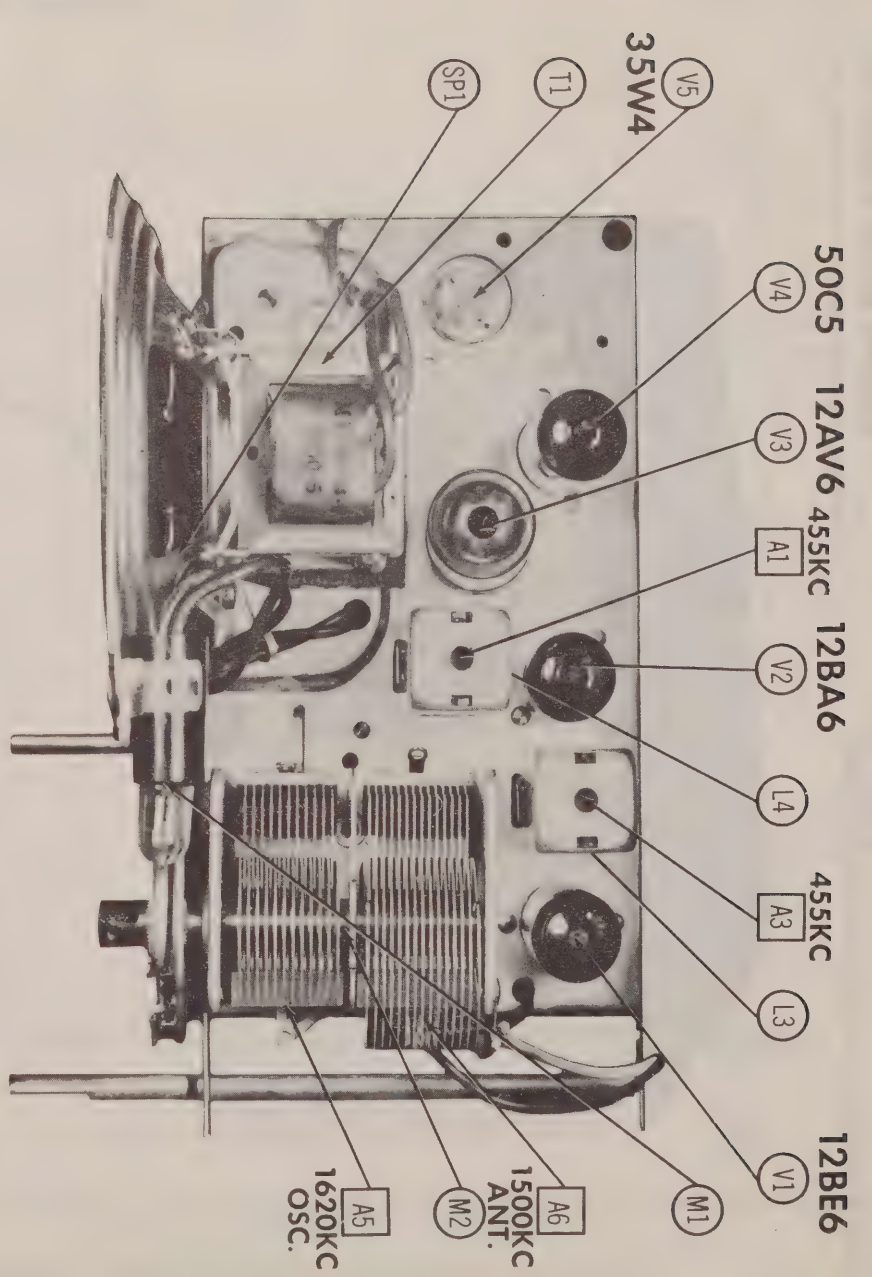
| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: PHILCO PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R7A | 500KΩ | ½ | ♦30-6001 | BTS-500K | |
| B | 500KΩ | ½ | | BTS-500K | |
| R8 | 150Ω | ½ | 66-1158340 | BTS-150 | |
| R9 | 220Ω | 1 | 66-1224340 | BTA-220 | |
| R10 | 1000Ω | ½ | 66-2108340 | BTS-1000 | |
| R11 | 100Ω | 1 | 33-1343-3 | BTA-100 | |

♦ Items R7A, R7B, C7A, C7B, C7C are combined in one unit.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING: IMPEDANCE PRI. | RATING: IMPEDANCE SEC. | RATING: DC RES. PRI. | RATING: DC RES. SEC. | REPLACEMENT DATA: PHILCO PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| T1 | 2KΩ | 3.4Ω | 234Ω | .92Ω | Part of Speaker | A-3332① | A-3025① | R0-2① | S-2X① | ① Bend mounting tabs down, file out slots, mount on original mounting bracket. |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | PHILCO PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3.4Ω | 36-1627-23<br>36-1627-8 ① | ST-113<br>Mod P4-X | 4A07 | ① Alternate speaker. |

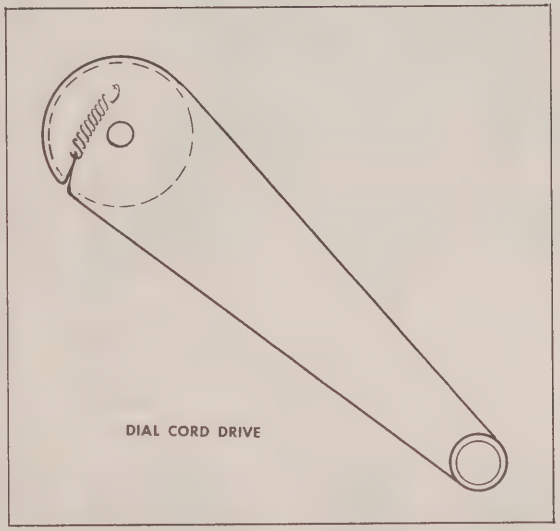
## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | PHILCO PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Loop Ant. | 3Ω | | 76-8515-1 | | | | Includes cabinet back |
| L2 | Osc. Coil | 1Ω | 7Ω | 32-4453-6 | | | 70 Osc. * | |
| L3 | Input IF | 16Ω | 16Ω | 32-4161A | 16-6758 | BC-352 | 12-C1 | |
| L4 | Output IF | 15Ω | 15Ω | 32-4240A | 16-6770 | BC-355 | 12-C6 | |

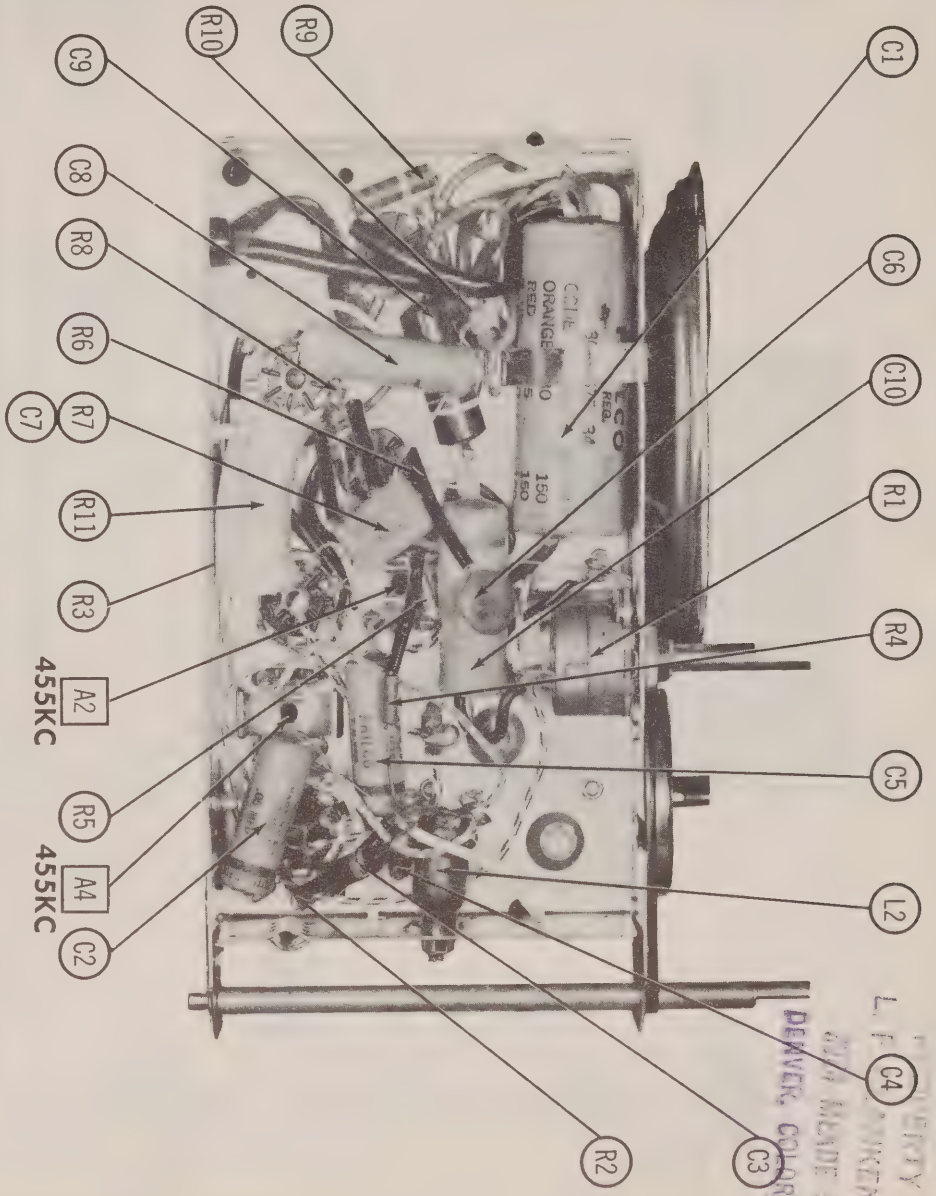
* Disregard tap on secondary winding.

## MISCELLANEOUS

| ITEM No. | PART NAME | PHILCO PART No. | NOTES |
|---|---|---|---|
| M1 | Dial light | 34-2068 | #47 bayonet |
| M2 | Tuning cap | 31-2751-14 | 2 gang (14-483MMF, 9-170MMF) |
| | Cabinet | 10990 | Cardinal |
| | Cabinet | 10990-1 | Sand |
| | Dial pointer | 54-6061 | |
| | Knob | 54-6062 | 2 used |




## CHASSIS—BOTTOM VIEW

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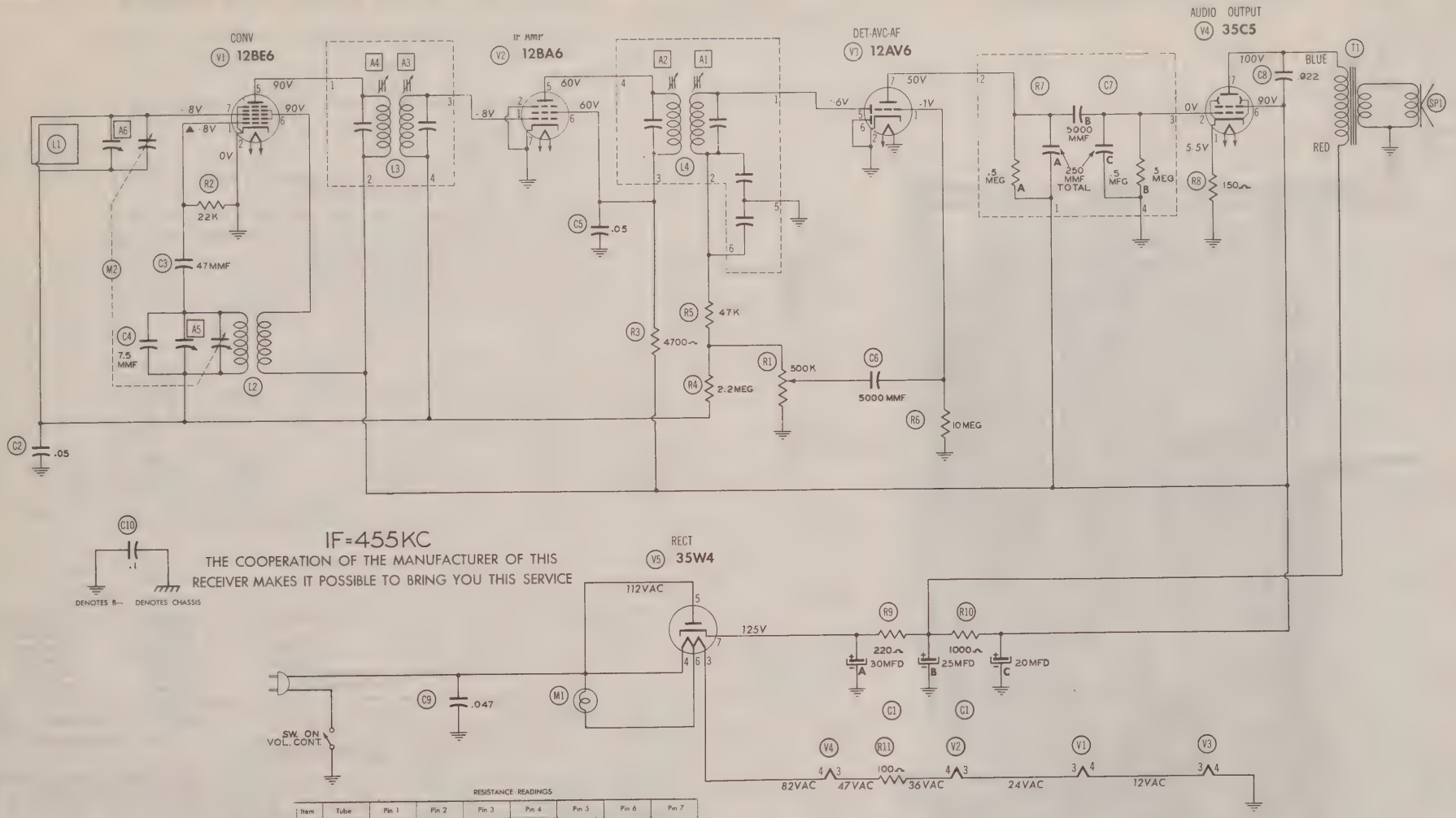
PHILCO
MODEL B570 (Code 121)




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BE6 | 22KΩ | 0Ω | 24Ω | 12Ω | †1.2KΩ | †1.2KΩ | 2.7Meg |
| V 2 | 12BA6 | 2.7Meg | 0Ω | 24Ω | 36Ω | †6KΩ | †6KΩ | 0Ω |
| V 3 | 12AV6 | 10Meg | 0Ω | 12Ω | 0Ω | 550KΩ | 0Ω | †500KΩ |
| V 4 | 35C5 | 150Ω | 500KΩ | 800Ω | 850Ω | 500KΩ | †1.2KΩ | †450Ω |
| V 5 | 35W4 | †220Ω | †220Ω | 850Ω | 900Ω | 900Ω | 900Ω | 200KΩ |

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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228-13

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

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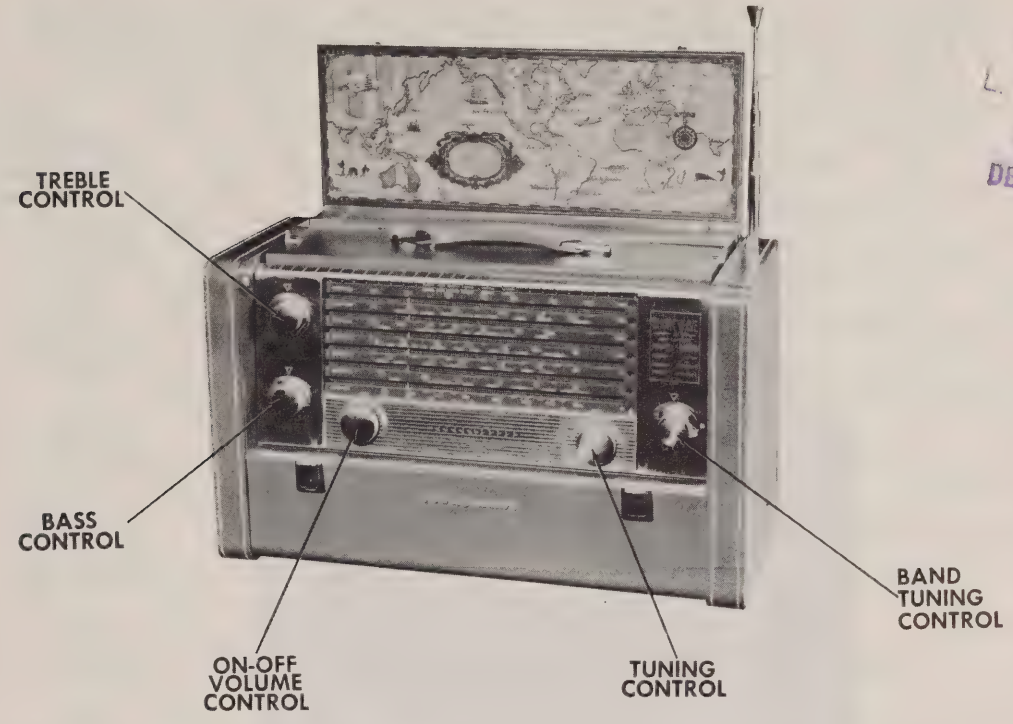
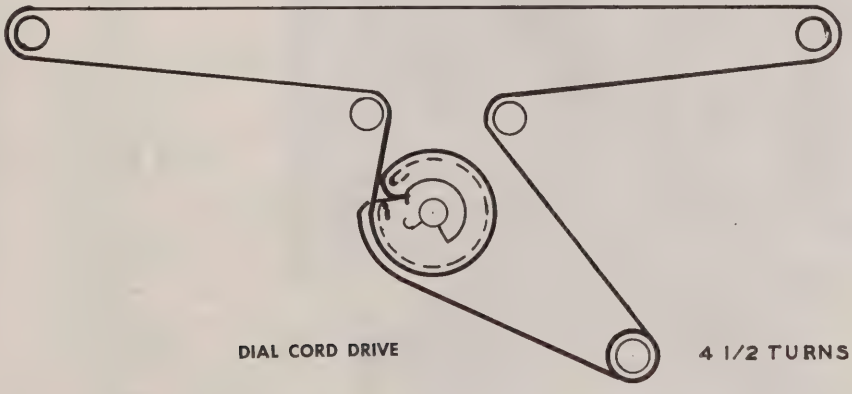
RCA VICTOR
MODEL 3-BX-671 (Ch. RC-1125)




RCA VICTOR
MODEL 3-BX-671 (Ch. RC-1125)

| | |
|---|---|
| TRADE NAME | RCA Victor Model 3-BX-671 (Ch. RC-1125) |
| MANUFACTURER | RCA Victor Div., Radio Corp. of America, Camden, N.J. |
| TYPE SET | Three Power Portable 7 Band AM Superheterodyne Receiver |
| TUBES (Five) | Types 1U4 RF Amp., 1L6 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output |
| POWER SUPPLY | 110-120 Volts AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply in Pack Form |
| RATING | .110 Amp. @ 117 Volts AC (or) 56MA @ 9 Volts & 14MA @ 90 Volts DC |
| TUNING RANGE | "A" Band (540-1600KC) 31 Meter Spread Band (9.45-9.85MC<br>"B" Band (2.0-4.0MC) 25 Meter Spread Band (11.55-12.05MC)<br>"C" Band (4.0-8.0MC) 19 Meter Spread Band (14.9-15.55MC)<br>16 Meter Spread Band (17.5 -18.2MC) |



DIAL CORD DRIVE — 4 1/2 TURNS

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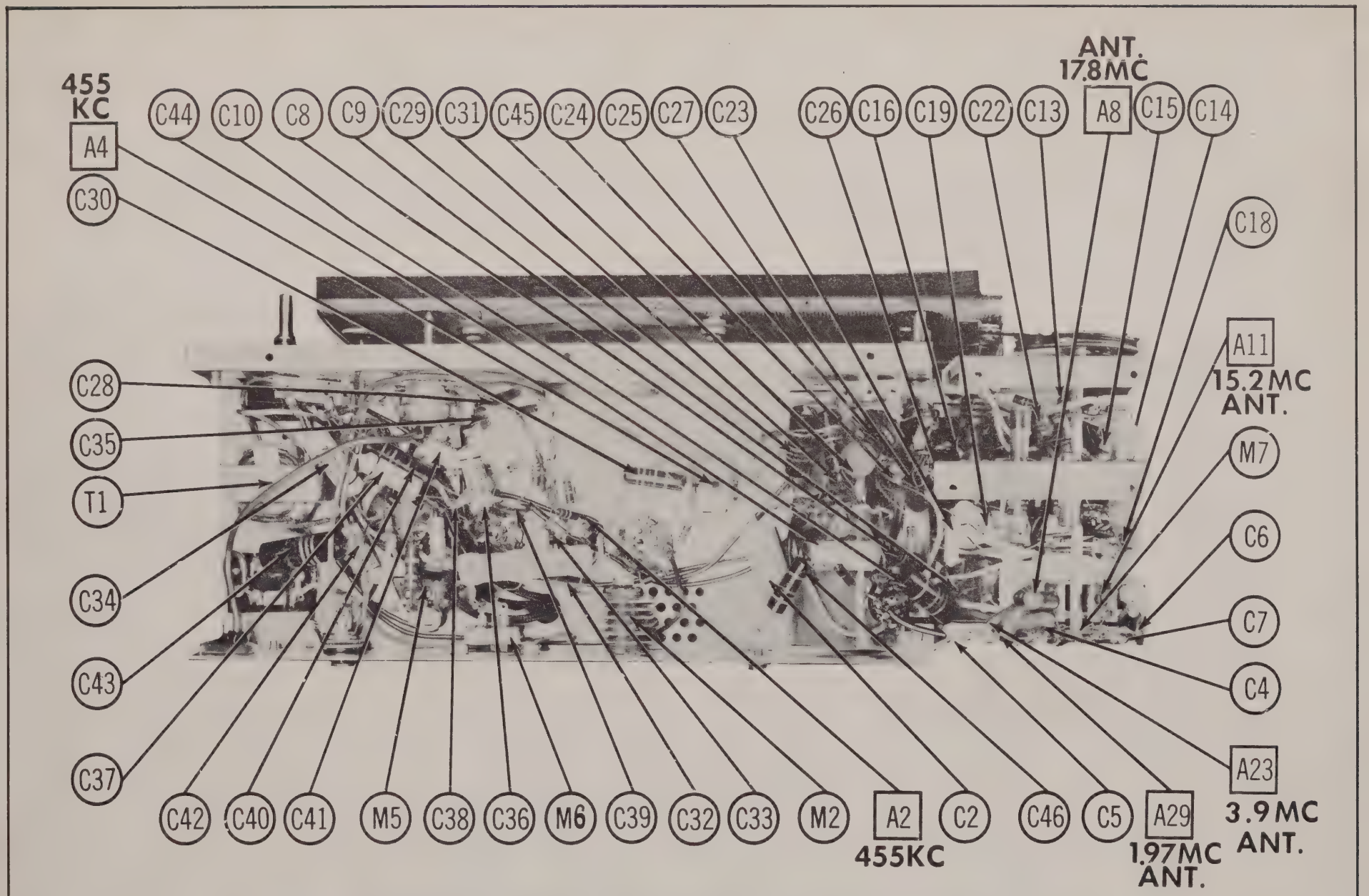



CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Receiver alignment with battery operation is preferable.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn treble tone control fully clockwise and bass tone control fully counter clockwise.
With tuning gang fully closed set pointer at red index mark just below "17.5" on the 16 meter spread band scale.
Attenuate generator to maintain as low an output as possible to avoid AVC action.

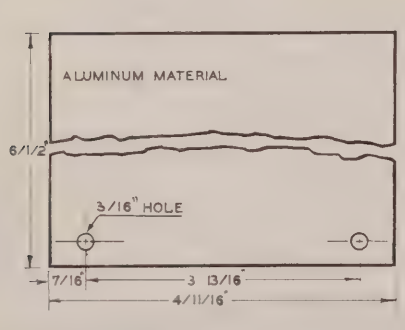
IF ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .01MFD | High side to pin 6 (grid) of 1U4 (V3). Low side to chassis. | 455KC (400~Mod) | "A" | Quiet point near 1600KC | Across voice coil | A1, A2 | Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. |
| 2. | " | High side to pin 6 (grid) of 1L6 (V2). Low side to chassis. | " | " | " | " | A3, A4 | " |

OSCILLATOR AND RF ALIGNMENT

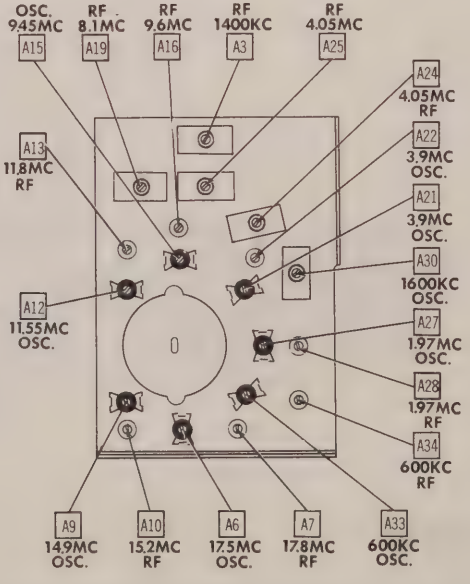
Replace bottom cover.
Secure the alignment fixture (Fig.1) to the tuner side of the chassis to simulate the effect of the case. Temporary use of sheet metal clips and hardware on the dust cover base may be used to mount fixture to chassis. Use of the fixture helps obtain maximum sensitivity during alignment.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 3. | 24MMF in series with 22Ω resistor | High side thru dummy to junction of C4 and terminal #9 of M7 section 4. Low side to chassis. | 18.25MC (400~Mod) | 16 meter band | Tuning gang fully open | Across voice coil | A5 | Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. |
| 4. | " | " | 17.5MC | " | Tuning gang fully closed | " | A6 | Adjust for maximum deflection. |
| 5. | " | " | 17.8MC | " | Tune to 17.8MC signal | " | A7, A8 | Adjust for maximum deflection while rocking tuning gang thru 17.8MC signal. |
| 6. | " | " | 14.9MC | 19 meter band | Tuning gang fully closed | " | A9 | Adjust for maximum deflection. |
| 7. | " | " | 15.2MC | " | Tune to 15.2MC signal | " | A10, A11 | Adjust for maximum deflection while rocking tuning gang thru 15.2MC signal |
| 8. | " | " | 11.55MC | 25 meter band | Tuning gang fully closed | " | A12 | Adjust for maximum deflection. |
| 9. | " | " | 11.8MC | " | Tune to 11.8MC signal | " | A13, A14 | Adjust for maximum deflection while rocking tuning gang thru 11.8MC signal |
| 10. | " | " | 9.45MC | 31 meter band | Tuning gang fully closed | " | A15 | Adjust for maximum deflection. |
| 11. | " | " | 9.6MC | " | Tune to 9.6MC signal | " | A16, A17 | Adjust for maximum deflection while rocking tuning gang thru 9.6MC signal. |
| 12. | " | " | 8.1MC | "C" band | tuning gang fully open | " | A18, A19 A20 | Adjust for maximum deflection in order given The tuning range and dial calibration of the succeeding bands depend upon the accuracy of the adjustment of A18. Avoid aligning on image. |
| 13. | " | " | 3.9MC | " | Tuning gang fully closed | " | A21, A22 A23 | Adjust for maximum deflection. Repeat steps 12 and 13 until maximum deflection is obtained. |
| 14. | " | " | 4.05MC | "B" band | Tuning gang fully open | " | A24, A25 A26 | Adjust for maximum deflection. |
| 15. | " | " | 1.97MC | " | Tuning gang fully closed | " | A27, A28 A29 | Adjust for maximum deflection. Repeat steps 14 and 15 until maximum deflection is obtained. |
| 16. | Remove alignment fixture and install chassis in cabinet. Plug in loop cable. | | | | | | | |
| 17. | Short length of wire near receiver | High side to dummy. Low side to chassis. | 1620KC | "A" band | Tuning gang fully open | Across voice coil | A30 | Adjust for maximum deflection. |
| 18. | " | " | 1400KC | " | Tune to 1400KC signal | " | A31, A32 | Adjust for maximum deflection. |
| 19. | " | " | 600KC | " | Tune to 600KC signal | " | A33, A34 | Adjust for maximum deflection while rocking tuning gang thru 600KC signal. Repeat steps 17, 18 and 19. Replace loop antenna with ferrite rod antenna and extend cable to maximum. |
| 20. | " | " | 1400KC | " | Tune to 1400KC signal | " | A35 | Adjust for maximum deflection. |




ALIGNMENT FIXTURE

FIG. 1



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CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION

# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | RCA Victor PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 1Meg | 1/2 | 78093 | Q13-137 | AG-63-Z | B-70 | U53 | Treble |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| R2A | 2Meg | 1/2 | 78094 | Q11-139 | AG-83-S | B-75 | U56 | Bass |
| R3A | 1Meg | 1/2 | 78092 | Q13-137X | AK-98 | BT-72-S | UT440 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R3A |
| C | Switch | | Not Req. | 76-2 | SWB-2 | Not Req. | US-27 | Attach to R3A |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | RCA Victor PART No. | IRC PART No. | |
| R4 | 1Meg | 1/2 | 503510 | BTS-1Meg | |
| R5 | 150Ω | 1/2 | 503115 | BTS-150 | |
| R6 | 15KΩ | 1/2 | 503315 | BTS-15K | |
| R7 | 1Meg | 1/2 | 503510 | BTS-1Meg | |
| R8 | 2.2Meg | 1/2 | 503522 | BTS-2.2Meg | |
| R9 | 100Ω | 1/2 | 503110 | BTS-100 | |
| R10 | 100KΩ | 1/2 | 503410 | BTS-100K | |
| R11 | 12Ω | 1/2 | 78146 | BTS-12 | Note 1 |
| R12 | 56KΩ | 1/2 | 503356 | BTS-56K | |
| R13 | 5.6Meg | 1/2 | 503556 | BTS-5.6Meg | |
| R14 | 4.7Meg | 1/2 | 503547 | BTS-4.7Meg | |
| R15 | 120Ω | 1/2 | 503112 | BTS-120 | |
| R16 | 1000Ω | 1/2 | 503210 | BTS-1000 | |
| R17 | 68KΩ | 1/2 | 503368 | BTS-68K | |
| R18 | 3.9Meg | 1/2 | 503539 | BTS-3.9Meg | |
| R19 | 1Meg | 1/2 | 503510 | BTS-1Meg | |
| R20 | 470KΩ | 1/2 | 503447 | BTS-470K | |
| R21 | 1Meg | 1/2 | 503510 | BTS-1Meg | |
| R22 | 270Ω | 1/2 | 503127 | BTS-270 | |
| R23 | 1000Ω | 1/2 | 503210 | BTS-1000 | |
| R24 | 15KΩ | 1/2 | 503315 | BTS-15K | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | RCA Victor PART No. | IRC PART No. | |
| R25 | 10Meg | 1/2 | 503610 | BTS-10Meg | |
| R26 | 10Meg | 1/2 | 503610 | BTS-10Meg | |
| R27 | 2.2Meg | 1/2 | 503522 | BTS-2.2Meg | |
| R28 | 1Meg | 1/2 | 503510 | BTS-1Meg | |
| R29 | 22KΩ | 1/2 | 503322 | BTS-22K | |
| R30 | 10Meg | 1/2 | 503610 | BTS-10Meg | |
| R31 | 3300Ω | 1/2 | 503233 | BTS-3300 | |
| R32 | 1000Ω | 1/2 | 503210 | BTS-1000 | |
| R33A | 620Ω | 20 | | | |
| B | 1050Ω | 20 | | | |
| R34 | 15KΩ | 1 | 503315 | BTA-15K | |
| R35 | 560Ω | 1 | 513156 | BTA-560 | |
| R36A | 55Ω | 5 | 78136 | | |
| B | 75Ω | 5 | | | |
| R37A | 950Ω | 3 1/2 | 78102 | | |
| B | 950Ω | 3 1/2 | | | |
| R38 | 27Ω | 1/2 | 503027 | BTS-27 | |

Note 1. Items R11, C23 are combined in one unit.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | RCA Victor PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T1 | 10KΩ | 3.3Ω | 500Ω | .5Ω | 78100 | A-3879 ① | A-2932 ① | RO-16 ① | S-11X ① | ① Bend mounting tabs down, file out slots. Mount on original mounting bracket |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | RCA Victor PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 5 1/4 " | PM | 3.3Ω | 78147 | ST-803 Mod P525 | 52A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | RCA Victor PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | BC Loop Ant. | 1Ω | | 78187 | | | | Includes .01MFD cap. and Lid. |
| L2 | BC Ant. Coil | .6Ω | | 78196 | | | | |
| L3 | Ant. Loading Coil | 1Ω | | 78129 | 19-3125 | TV-181 | 6153 | 115 Microhenries |
| L4 | SW Ant. Coil | .4Ω | | 78123 | | | | "B" band (2-4MC) |
| L5 | SW Ant. Coil | .3Ω | | 78124 | | | | "C" band (4-8MC) |
| L6 | SW Ant. Coil | .3Ω | | 78125 | | | | 31 Meter band |
| L7 | SW Ant. Coil | .3Ω | | 78126 | | | | 25 Meter band |
| L8 | SW Ant. Coil | .1Ω | | 78127 | | | | 19 Meter band |
| L9 | SW Ant. Coil | .1Ω | | 78128 | | | | 16 Meter band |
| L10 | BC RF Coil | 33Ω | 6Ω | 78116 | | | | "A" band |

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L11 | SW RF Coil | .4Ω | | 78117 | | | | "B" band |
| L12 | SW RF Coil | .2Ω | | 78118 | | | | "C" band |
| L13 | SW RF Coil | .2Ω | | 78119 | | | | 31 Meter band |
| L14 | SW RF Coil | .2Ω | | 78120 | | | | 25Meter band |
| L15 | SW RF Coil | 0Ω | | 78121 | | | | 19 Meter band |
| L16 | SW RF Coil | 0Ω | | 78122 | | | | 16 Meter band |
| L17 | BC Osc. Coil | 1.3Ω | 5.5Ω | 78109 | | | | "A" band |
| L18 | SW Osc. Coil | .2Ω | .3Ω | 78110 | | | | "B" band |
| L19 | SW Osc. Coil | .2Ω | .2Ω | 78111 | | | | "C" band |
| L20 | SW Osc. Coil | .1Ω | .2Ω | 78112 | | | | 31 Meter band |
| L21 | SW Osc. Coil | .1Ω | .2Ω | 78113 | | | | 25 Meter band |
| L22 | SW Osc. Coil | .1Ω | .1Ω | 78114 | | | | 19 Meter band |
| L23 | SW Osc. Coil | .1Ω | .1Ω | 78115 | | | | 16 Meter band |
| L24 | Input IF | 12Ω | 12Ω | 74918 | 16-6758 | BC-352 | 12-C1 | |
| L25 | Output IF | 15Ω | 16Ω | 73037 | 16-6770 | BC-355 | 12-C6 | |

## SELENIUM RECTIFIER

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT | RCA Victor PART No. | SELETRON PART No. | FEDERAL PART No. | MALLORY PART No. | SARKES TARZIAN PART No. | |
| M1 | .065A | 78101 | 5M4 | 1003 | 6S75 | 75 | ① Rectifier (M2) is used with rect. (M1) for 220V operation. |
| M2 | | 77958 ① | 5M4 | 1002 | 6S75 | 75 | |

## BATTERIES

| ITEM No. | VOLTAGE | RCA Victor PART No. | REPLACEMENT DATA | | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | EVEREADY | | | BURGESS | | | |
| | | | "A" | "B" | "A-B" | "A" | "B" | "A-B" | |
| M3 | 9V "A" 90V "B" | VS047 | | | 752 | | | G6B60 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | RCA Victor PART No. | NOTES |
|---|---|---|---|
| M4 | Tuning Cap. | 78108 | 21-457MMF, 21-457MMF, 34-425MMF - A, B & C bands<br>10-14MMF, 10-14MMF, 12-16MMF - 31M, 25M, 19M, &16M bands |
| M5 | Switch | 71039 | Power Selector - DPDT slide |
| M6 | Switch | 78096 | Low line voltage |
| M7 | Switch | 78106 | Function selector, 7 pos. 4 deck |
| M8 | Switch | | AC/DC (Converter unit RK-186) |
| | Trimmer Cap. | 75967 | 4-20MMF, BC Ant. Coil Adj. (A35) |
| | Trimmer Cap. | 78130 | 4-20MMF ( 4 used) (A19, A25, A31, A32) |
| | Trimmer Cap. | 78131 | 4-20MMF ( 2 used) (A24, A30) |
| | Trimmer Cap. | 78132 | 20-50MMF ( 2 used) (A20, A26) |
| | Back Cover | 78184 | Case back complete |
| | Antenna | 78157 | Telescope |
| | Button | 78166 | Telescopic antenna pushbutton |
| | Cap | 78165 | Telescopic antenna screw or cap |
| | Case | 78190 | For ferrite rod antenna |
| | Case | 78153 | Less sides, handle, links, feet front and back cover |
| | Cover | 78195 | Buttom cover for ferrite rod antenna |
| | Cup | 78191 | Suction - for ferrite rod antenna case |
| | Dial Scale | 78181 | Less escutcheon |
| | Escutcheon | 78182 | Dial scale |
| | Foot | 78169 | Rubber foot |
| | Handle | 78173 | |
| | Knob | 78148 | Tuning - Off/On/Volume (2 used) |
| | Knob | 78149 | Bass tone |
| | Knob | 78150 | Treble tone |
| | Knob | 78151 | Function Selector |
| | Map | 78414 | Includes time Chart |
| | Case side | 77974 | Left hand with leather belting |
| | Case side | 77975 | Right hand with leather belting |

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# RCA VICTOR MODELS 17-S-349, U, 17-S-350, U, 17-S-351, U, 17-S-360, U, 17-T-352U, 17-T-361, U (Ch. KCS78F, H, J)

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*TRADE MARK

# RCA VICTOR MODELS 17-S-349, U, 17-S-350, U, 17-S-351, U, 17-S-360, U, 17-T-352U, 17-T-361, U (Ch. KCS78F, H, J

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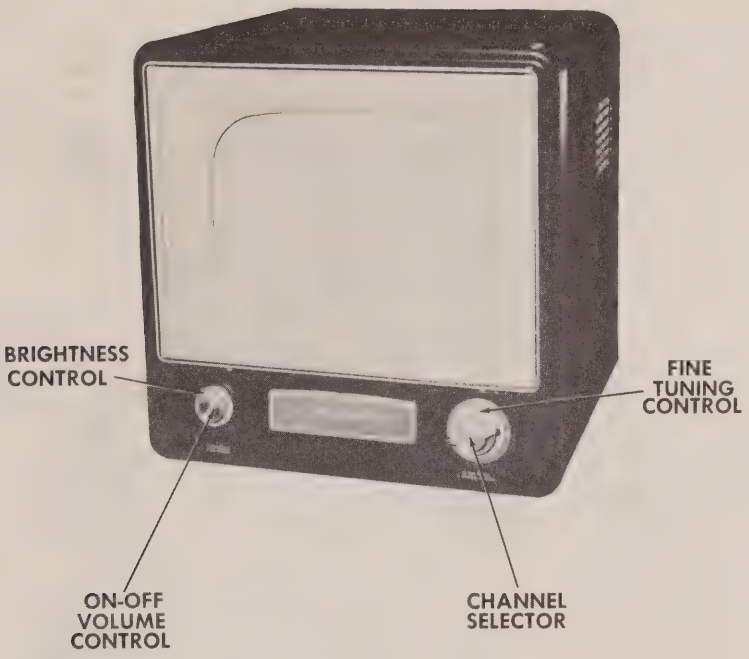
3924 MEADE ST
DENVER, COLORADO




RCA VICTOR MODEL 17-S-350

| TRADE NAME | RCA Victor | MODELS | CHASSIS | TUNERS |
|---|---|---|---|---|
| | | 17-S-349 | KCS78F | KRK29 |
| | | 17-S-349U | KCS78H | KRK29A/27 |
| | | 17-S-350, 17-S-351, 17-S-360, 17-T-361 | KCS78F | KRK29 |
| | | 17-S-350U, 17-S-351U, 17-S-360U | KCS78H | KRK29A/27 |
| | | 17-T-352U, 17-T-361U | KCS78J | KRK12B |

| | |
|---|---|
| MANUFACTURER | RCA Victor Div., Radio Corp. of America, Camden, N.J. |
| TYPE SET | Television Receiver |
| TUBES | Twenty-two |
| POWER SUPPLY | 110-120 Volts AC-60 Cycle RATING 1.98 Amp. @ 117 Volts AC |
| TUNING RANGE | Channel 2 thru 13 VHF, 14 thru 83 UHF , Video IF 45.75MC, Sound IF 41.25MC ( Interrcarrier) |

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RCA VICTOR MODELS 17-S-349, U, 17-S-350, U, 17-S-351, U, 17-S-360, U, 17-T-352U, 17-T-361, U (Ch. KCS78F, H, J)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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DATE 1-54 SET 228 FOLDER 15

# TROUBLE SHOOTING AIDS (cont)

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## POWER

**DEAD SET**

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, check jumper on yoke plug, V20, V21 and B+ filter and decoupling components.

**SMALL AND/OR DIM PIX**

Substitute V20 and V21. Check B+ filter and decoupling components.

## HIGH VOLTAGE

**LOSS OF HIGH VOLTAGE**

Check fuse M1. Check by substitution V16, V17, V18 and V19. Check waveform W15.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check C111, R120, T2, T4A and other associated components. | Check C100, C101, C104 and other associated components. |

**INSUFFICIENT HIGH VOLTAGE**

Check by substitution V16, V17, V18, V19, V20 and V21. Follow procedure outlined under "Loss of High Voltage".

**BLOOMING**

Check by substitution V19, V18, V17, V16, V20, V21. Check C111, R120, T2, T4A, picture tube and other associated circuit components.

## GENERAL

**RASTER SOUND NO PIX**

See "Loss of Video".

**RASTER NO SOUND NO PIX**

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check associated components.

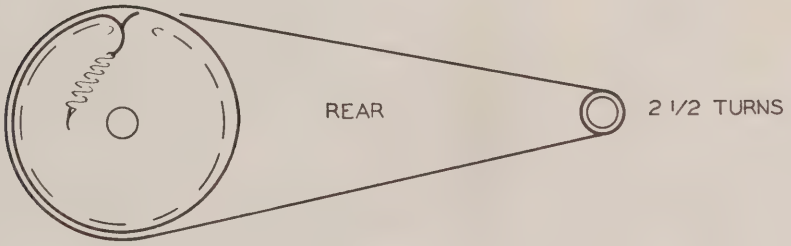
**NO RASTER NO SOUND**

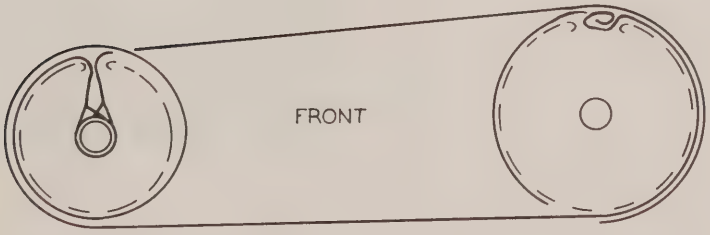
Follow procedure outlined under "Dead Set".

**INTERMITTENT STREAKS**

Check signal at W2 for interference pulses. Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.



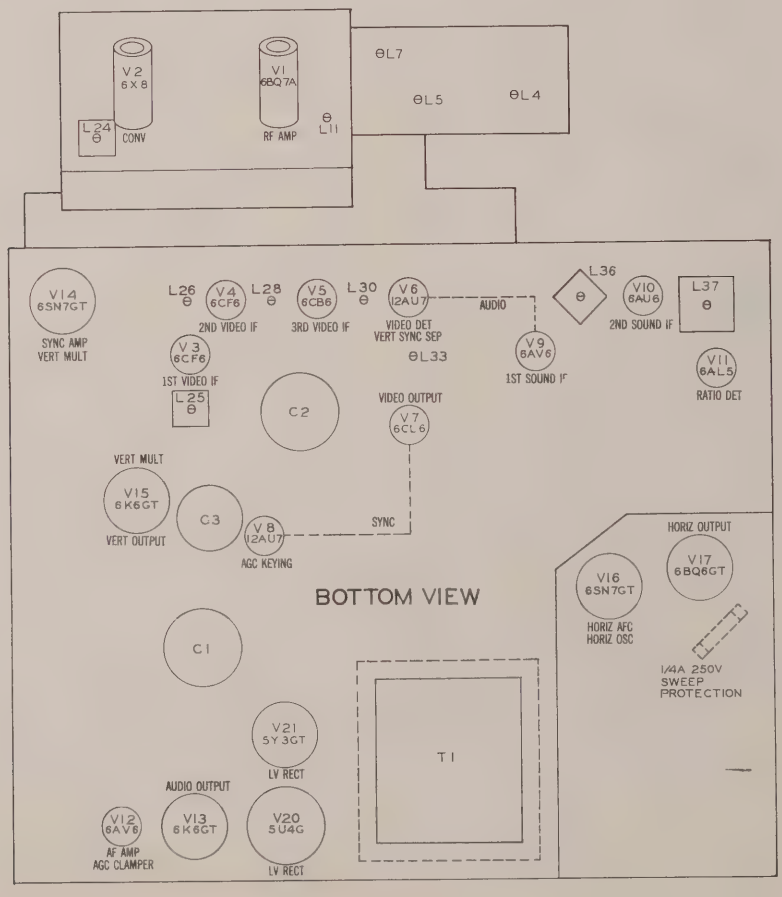




## UHF DRIVE CORD STRINGING

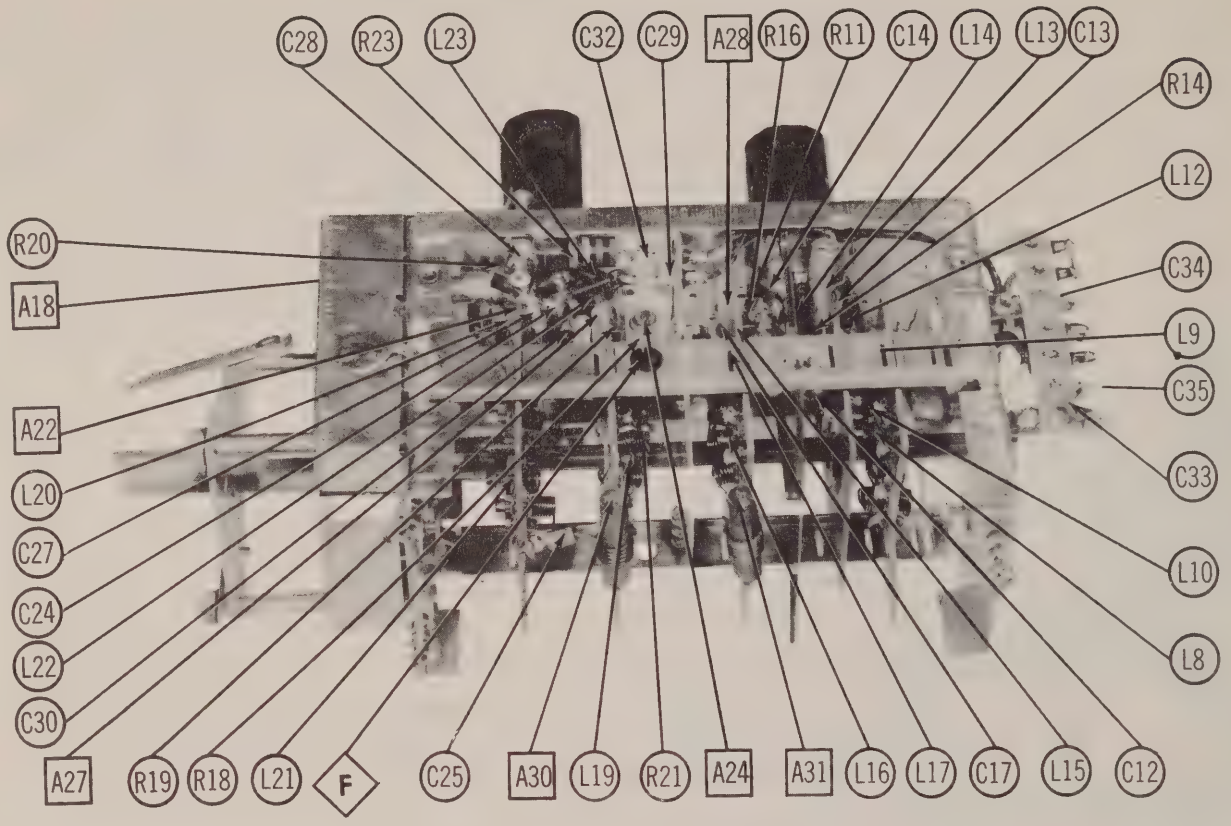
# RESISTANCE MEASUREMENTS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BQ7A | †1.5KΩ | 570KΩ | 700KΩ | 0Ω | .1Ω | 700KΩ | 340KΩ | 120Ω | 0Ω |
| V 2 | 6X8 | 0Ω | 100KΩ | †12.5KΩ | 0Ω | .1Ω | 0Ω | 100KΩ | †15.5KΩ | †15.5KΩ |
| V 3 | 6CF6 | 44KΩ | 68Ω | 0Ω | .1Ω | †4.8KΩ | †4.8KΩ | 0Ω | | |
| V 4 | 6CF6 | 43KΩ | 33Ω | .1Ω | 0Ω | †4.8KΩ | †4.8KΩ | 0Ω | | |
| V 5 | 6CB6 | .2Ω | 180Ω | .1Ω | 0Ω | †3.8KΩ | †3.8KΩ | 0Ω | | |
| V 6 | 12AU7 | 1.8Meg | 3.9KΩ | .2Ω | .1Ω | .1Ω | †680KΩ | 2.2Meg | 0Ω | 0Ω |
| V 7 | 6CL6 | 33Ω | 3.9KΩ | †12KΩ | 0Ω | .1Ω | †7.5KΩ | 0Ω | †12KΩ | 3.9KΩ |
| V 8 | 12AU7 | 230KΩ | 4.5Meg | †3.8KΩ | 0Ω | 0Ω | †8.2KΩ | †22KΩ | 350KΩ | .1Ω |
| V 9 | 6AV6 | 7.5Ω | 0Ω | 0Ω | .1Ω | †3.8KΩ | †3.8KΩ | 82Ω | | |
| V 10 | 6AU6 | 120KΩ | 0Ω | 0Ω | .1Ω | †10KΩ | †4.8KΩ | 0Ω | | |
| V 11 | 6AL5 | 10KΩ | 10KΩ | .1Ω | 0Ω | INF | 0Ω | INF | | |
| V 12 | 6AV6 | 10Meg | 0Ω | 0Ω | .1Ω | 340KΩ | 340KΩ | †330KΩ | | |
| V 13 | 6K6GT | INF | 0Ω | †2.1KΩ | †1.8KΩ | 470KΩ | INF | .1Ω | 560Ω | |
| V 14 | 6SN7GT | 70KΩ | †13.5KΩ | 0Ω | 2.3Meg | ¶3.8Meg | 0Ω | 0Ω | .1Ω | |
| V 15 | 6K6GT | INF | .1Ω | †570Ω | †43Ω | 2.3Meg | 1.1Meg | 0Ω | 600Ω | |
| V 16 | 6SN7GT | 2Meg | †40KΩ | 390KΩ | 480KΩ | †47KΩ | 0Ω | .1Ω | 0Ω | |
| V 17 | 6BQ6GT | INF | .1Ω | INF | †6.8KΩ | 470KΩ | 470KΩ | 0Ω | 180Ω | TOPCAP ¶14Ω |
| V 18 | 6W4GT | INF | INF | 1Meg | INF | †64Ω | INF | ¶29Ω | ¶29Ω | |
| V 19 | 1B3GT | PINS 1 - 8 HAVE INF RESISTANCE | | | | | | | | TOP CAP ¶164Ω |
| V 20 | 5U4G | INF | 30KΩ | INF | 13Ω | INF | 14Ω | INF | 30KΩ | |
| V 21 | 5Y3GT | INF | 30KΩ | INF | 14Ω | INF | 13Ω | INF | 30KΩ | |
| V 22 | 1/4CP4 | 0Ω | †260KΩ | PIN 10 ¶2.5KΩ | PIN 11 †180KΩ | PIN 12 .1Ω | | | | |

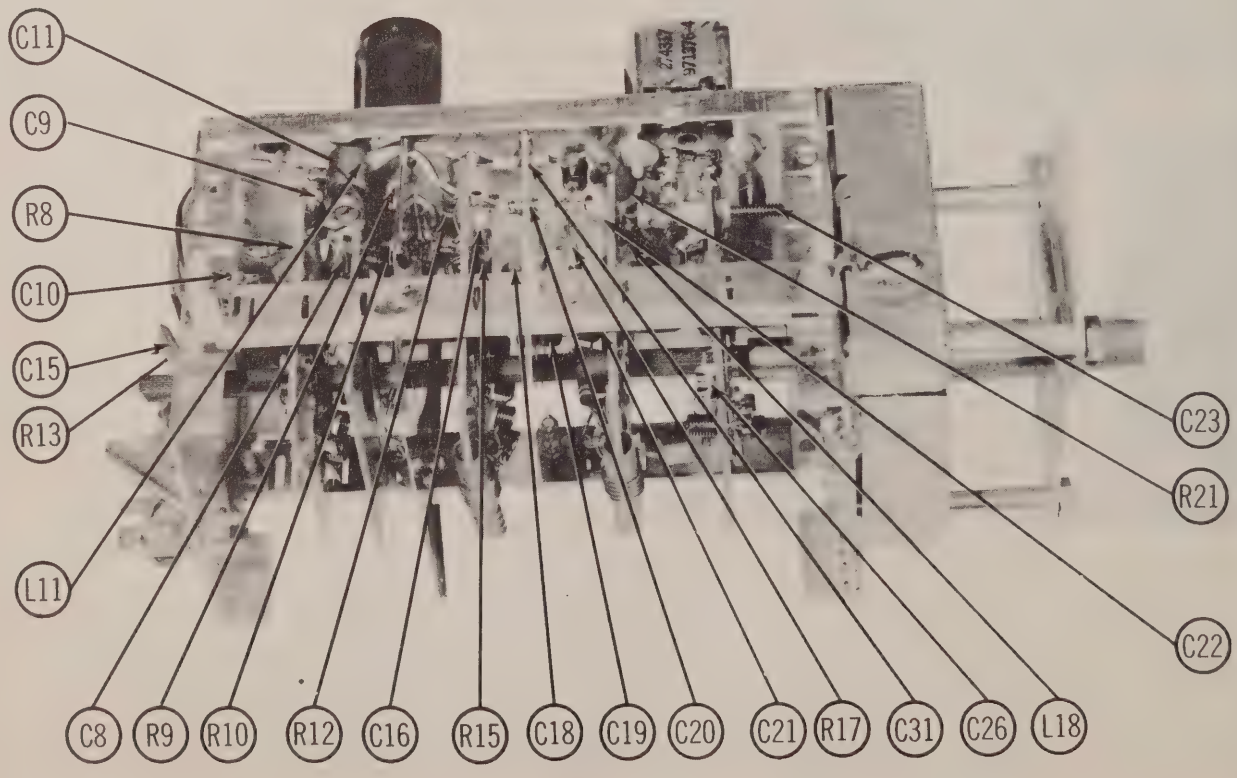
† MEASURED FROM PIN 2 OF V21
¶ MEASURED FROM PIN 3 OF V18




# TUBE PLACEMENT CHART




**RF TUNER-RIGHT SIDE**




**RF TUNER-LEFT SIDE**

# ALIGNMENT INSTRUCTIONS

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DENVER, COLORADO

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminate by removing the horizontal oscillator tube, V16.

KRK29 OR KRK29A ANTENNA MATCHING UNIT ALIGNMENT

The antenna matching unit has been properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place. If a new antenna unit is installed, the RF unit should be realigned. Alignment should not be attempted without the proper alignment facilities.
Disconnect the lead from the FM trap, L7, to the channel selector switch. Use a short jumper to connect point (A) on the matching unit thru a .001MFD capacitor to pin 1, grid, of 6CF6 (V4). Remove 6CF6 (V3) from its socket.
Cover of matching unit must be in place during alignment.
Connect the ends of a 1000Ω potentiometer across a 7.5 volt battery capableof withstanding considerable current drain. Connect the positive terminal to chassis and the potentiometer arm to the junction of R25 and R28. Set the potentiometer arm to obtain -5 volts at this point.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | Two 130Ω carbon resistors | Across antenna terminals with 130Ω in each lead. | Not Used | 45.75MC (400∿ Mod) | Any | Vert. amp to point (B). Low side to chassis. | A1 | Set oscilloscope gain to maximum and adjust A1 for MINIMUM 400∿ response. |
| 2. | " | " | " | 41.25MC (400∿ Mod) | " | " | A2 | Adjust for MINIMUM 400∿ response on scope. |
| 3. | | | 50MC (20MC Swp) | 50MC<br>52MC<br>53MC<br>60MC | | Vert. amp thru detector probe (Fig1) to point (A). Low side to chassis. | A3, A4 | Remove the .001 MFD capacitor (see instructions above) from point (A) and connect a 300Ω carbon resistor from point (A) to chassis using short leads. Adjust A3 and A4 to obtain response curve as in Fig. 2. Repeat steps 1, 2, and 3 until no further improvement is made. Remove the 300Ω resistor and the detector probe. Restore the connection between L7 and the channel switch. Replace V3. |

VIDEO IF ALIGNMENT FOR RECEIVERS USING VHF TUNER KRK29

Connect bias supply as under antenna matching unit alignment and adjust for -5volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 4. | .001MFD | High side to terminal "A" of L25. Low side to chassis. | Not used | 44.5MC | Any not used locally | Use VTVM. DC probe to point (B). Common to chassis. | A5 | Adjust for maximum deflection. Attenuate generator to maintain not more than 3 volts on VTVM. |
| 5. | " | " | " | 45.5MC | " | " | A6 | " |
| 6. | " | " | " | 43.0MC | " | " | A7 | " |
| 7. | " | " | " | 47.25MC | " | " | A8 | Adjust for MINIMUM deflection. |
| 8. | .0015MFD ceramic capacitor | High side thru .0015 MFD to point (C). Low side to tuner chassis. Use very short leads. | 43MC (10MC Swp) | 42.5MC<br>45.75MC<br>47.25MC | 4 | Vert. amp. of scope thru detector (Fig 1) to pin 5 (plate) of 6CF6(V3). Low side to chassis. | A9, A10<br>A11 | Set AGC control fully clockwise. Preset A11 to minimum capacity. Clip 330Ω resistors across primaries of L28 and L30. Connect a 180Ω carbon resistor from plate to screen of 6CF6 (V3). Adjust A9 and A10 for maximum gain with 45.75MC at 70% response as in Fig. 3. Attenuate generator to maintain .3 volt peak to peak response on scope . Adjust A11 to place 42.5MC at 70% on response curve. |
| 9. | " | " | " | 42.5MC<br>45.0MC<br>45.75MC<br>46.5MC | " | Vert. amp to point (B). Low side to chassis. | | Disconnect the 180Ω and the two 330Ω resistors. Adjust output of generator for 3 volts peak to peak on scope. Retouch A5, A6, & A7. for response similar to Fig. 4. Continue with step 14. |

VIDEO IF ALIGNMENT FOR RECEIVERS USING VHF-UHF TUNER KRK29A/27

Connect the bias supply as under antenna matching unit alignment and adjust for -5 Volts.
Turn the AGC control fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 4. | .001MFD | High side to terminal "A" of 1st video IF transformer. Low side to chassis. | Not used | 44.5MC | Any not used locally | Use VTVM DC probe to point (B). Common to chassis. | A5 | Adjust for maximum deflection. Attenuate generator to maintain not more than 3 volts on VTVM. |
| 5. | " | " | " | 45.5MC | " | " | A6 | " |
| 6. | " | " | " | 43.0MC | " | " | A7 | " |
| 7. | " | " | " | 47.25MC | " | " | A8 | Adjust for MINIMUM deflection. |
| 8. | .0015MFD | High side thru .0015 MFD to point (C). Low side to chassis. Use very short leads. | 43MC (10MC Swp) | 42.5MC<br>45.75MC<br>47.25MC | 4 | Vert. amp of scope thru detector (Fig 1) to pin 5 (plate) of 6CF6 (1st video IF amp). Low side to chassis. | A9, A10<br>A11 | Preset A11 to minimum capacity. Clip 330Ω resistors across primary of 3rd and 4th video IF transformers. Connect a 180Ω carbon resistor from plate to screen of 6CF6 (1st video IF amp). Adjust A9 and A10 for maximum gain with 45.75MC at 70% response as in Fig. 3. Attenuate generator to maintain .3volt peak to peak response on scope. Adjust A11 to place 42.5MC at 70% on response curve. |
| 9. | " | " | " | 42.5MC<br>45.0MC<br>45.75MC<br>46.5MC | " | Vert. amp. to point (B). Low side to chassis. | | Disconnect the 180Ω and the two 330Ω resistors. Adjust output of generator for 3 volts peak to peak on scope. Retouch A5, A6, and A7 for response similar to Fig.4. |

# ALIGNMENT INSTRUCTIONS (cont)

KRK29A/27 IF AMPLIFIER CIRCUIT ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect the potentiometer arm of a second bias supply to point (D). Connect positive terminal to tuner case. Adjust potentiometer for -3 volts bias.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 10. | 1000Ω carbon resistor in series with .0015 MFD ceramic capacitor | High side thru 1KΩ in series with .0015MFD to rear terminal of 1N82 crystal holder. Low side to tuner chassis. Use very short leads. | 670MC (20MC Swp) | 41.25MC 45.75MC (see remarks) | 47 | Vert. amp thru detector probe (Fig. 1) to junction of 180Ω resistor and .0015 MFD capacitor (see remarks). Low side to chassis. | A12, A13 | Connect 180Ω carbon resistor in series with .0015 MFD capacitor. Connect the capacitor end to point E and the resistor end to ground. Loosely couple VHF signal generator to diode probe to obtain markers. Attenuate sweep generator for .3 volts (or less) peak to peak indication on scope. Adjust A12 (on UHF tuner) and A13 (on VHF tuner) for response similar to Fig. 5. |
| 11. | " | " | " | 669.25MC 673.75MC | " | Vert. amp. to point B. Low side to chassis. | | Remove 180Ω resistor and .0015MFD capacitor. Adjust generator for 3 volts peak to peak indication on scope. If Necessary, SLIGHTLY retouch A12 and A13 for response similar to Fig. 5. DO NOT RETOUCH A5, A6, A7, A8, or A9. |
| 12. | Two 130Ω carbon resistors | Across VHF antenna terminals with 130Ω in each lead. | 213MC (10MC Swp) | 42.5MC 45.0MC 45.75MC 46.5MC (see remarks) | 13 | " | | Leave AGC bias at -3 volts and IF bias at -5 volts. Couple marker generator loosely to pin 1 (grid) of first video IF amp. Check for response similar to Fig. 6. Check response on all VHF channels. SLIGHTLY retouch A5 and A6 for any overall tilt that is essentially the same on all channels. |
| 13. | " | Across UHF antenna terminals with 130Ω in each lead. | 470MC thru 884MC (20MC Swp) | " | 14 thru 83 | " | | Check all UHF channels for response similar to Fig. 6. If necessary, SLIGHTLY retouch A5 and A6 to correct any overall tilt. |

VIDEO IF ALIGNMENT FOR RECEIVERS USING UHF TUNER KRK-12B

Connect the bias supply as under antenna matching unit alignment and adjust for -5 volts.
Turn the AGC control fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 4. | .0015MFD ceramic capacitor | High side thru .0015MFD to front terminal of crystal mixer (1N82). Low side to tuner chassis. Use very short leads. | Not used | 44.5MC | Any not used locally. | Use VTVM DC probe to point (B). Common to chassis. | A5 | Adjust for maximum deflection. Attenuate generator to maintain not more than 3 volts at VTVM. |
| 5. | " | " | " | 45.5MC | " | " | A6 | " |
| 6. | " | " | " | 43.0MC | " | " | A7 | " |
| 7. | " | " | " | 47.25MC | " | " | A8 | Adjust for MINIMUM deflection. |
| 8. | " | " | 43MC (10MC Swp) | 42.5MC 45.75MC 47.25MC | 5 | Vert. amp. of scope thru detector probe (Fig. 1) to pin 5 (plate) of 6CF6 (first video IF amp.) Low side to chassis. | A9, A10 A11, A12 | Clip 330Ω resistors across primary of 3rd and 4th video IF transformers. Connect 180Ω carbon resistor from plate to screen of 6CF6 (First video IF amp.). Preset A11 to minimum capacity. Adjust A9 and A10 for maximum gain with 45.75MC at 70% response as in Fig. 3. A11 is a band width adjustment. Adjust A12 for maximum gain. If necessary, retouch A9 and A10 for desired response similar to Fig. 3. |
| 9. | " | " | " | 42.5MC 45.0MC 45.75MC 46.5MC | " | Vert. amp to point (B). Low side to chassis. | | Disconnect the 180Ω and the two 330Ω resistors. Adjust output of generator for 3 to 5 volts peak to peak on scope. Retouch A5, A6, and A7 for response similar to Fig. 4. Continue with Step 14. |

SOUND IF ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 14. | .001MFD | High side to pin 1 (grid) of 6AU6 (V9). Low side to chassis. | 4.5MC (Unmod) | Any not used locally | DC probe to point (D). Common to chassis. | A14 | Adjust for maximum deflection. Adjust generator output so that A14 peaks at 6 volts on VTVM. |
| 15. | " | " | " | " | DC probe to point (E). Common to chassis. | A15 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 14 and 15 making final adjustments with generator output set to produce 6 volts at point (D). |
| 16. | " | " | " | " | DC probe to point (D). Common to chassis. | A16 | Adjust for maximum as in step 14. |

4.5MC TRAP ALIGNMENT

Short pin 1 (grid) of 6CB6 (V5) to chassis to prevent noise from masking the output indication.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 17. | 1000Ω resistor | High side thru 1000Ω to pin 2 (grid) of V6A. Low side to chassis. | Not used | 4.5MC (400∿ Mod) | Any | Vert. amp thru detector (Fig. 1) to pin 6 (plate) of 6CL6 (V7). Low side to chassis. | A17 | Set generator output to approximately .5 volts. Adjust A17 for minimum 400∿ indication. Remove short from pin 1 of V5 to ground. |
| 18. | An alternate method of adjusting the 4.5MC trap is to tune in a TV station and examine the picture for 4.5MC beat interference. If beat is present in picture when the fine tuning control is set for proper oscillator frequency, turn fine tuning control slightly clockwise to exaggerate the beat and then adjust A17 for minimum beat. | | | | | | | |

If receiver employs an RCA KRK29 tuner continue alignment with step 19.
If receiver employs an RCA KRK29A/27 tuner continue alignment with step 34.
If receiver employs an RCA KRK12B tuner continue alignment with step 54.

# ALIGNMENT INSTRUCTIONS (cont)

KRK29 TUNER ALIGNMENT

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

An RF unit which is operative and requires only minor touch-up adjustments will require no presetting of adjustments. Where complete alignment is necessary make the following pre-adjustments:

1. Preset A18 all the way out.
2. Set channel 7 to 13 oscillator slugs one turn from tight.
3. Adjust A9 so that slug is all the way out.

Disconnect the link from terminals "A" and "B" of L25 and terminate the link with a 39Ω carbon resistor.
Connect the potentiometer arm of the bias supply to the AGC terminal on the tuner. Connect the positive lead to tuner chassis.
Adjust the bias supply to produce -3 Volts at AGC terminal of tuner.
Tuner alignment as outlined below requires the use of a heterodyne frequency meter.
The limits for oscillator injection voltage are 2 volts minimum and 5.5 volts maximum measured at point (F) with a VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 19. | Direct | High side to point (A). Low side to chassis. | Not used | 43.5MC (400~Mod) | 2 | Vert. Amp. to point (F). Low side to chassis. | A19 | To be sure that 43.5MC trap is adjusted with zero bias short tuner AGC terminal to ground. Set scope gain to maximum. Adjust signal generator for maximum output. Adjust A19 for MINIMUM 400~ indication on scope. Remove AGC jumper to ground. |
| 20. | " | RF input of heterodyne frequency meter to end of insulated wire inserted in hole provided for adjustment of A24 | " | Set frequency meter to 227MC | 8 | Not used | A21, A18 | Adjust A20 for -3 volts deflection on VTVM at point (F). Turn fine tuning control fully clockwise. Adjust A21 for audible beat on frequency meter. Adjust A18 clockwise until beat note just begins to change, then turn one full turn in same clockwise direction. Return fine tuning control to its mid-range position. |
| | NOTE: If channel 8 oscillator frequency cannot be reached by adjustment of A21 switch to channel 13 and adjust A22 for channel 13 oscillator frequency then switch to channel 12 and adjust A32 for channel 12 oscillator frequency. Continue down to channel 8 adjusting proper oscillator trimmer to obtain proper oscillator frequency on each channel. Also, on channel 8 adjust A21 for channel 8 oscillator frequency. Switch to channel 13 and adjust A22 then switch back to channel 8 and adjust A21 again. | | | | | | | |
| 21. | Two 130Ω Carbon Resistors | Across antenna terminals with 130Ω in each lead. | 183MC (10MC Swp) | 181.25MC 185.75MC | 8 | Vert. Amp. to point F. Low side to chassis. | A23, A24 A25, A26 | Set A9 to maximum counter clockwise rotation. Set scope gain to maximum and attenuate generator for minimu input signal which will produce usuable pattern on scope. Adjust A23, A24, A25 and A26 for response similar to Fig. 7. |
| 22. | Connect DC probe of VTVM to point (F). Connect common to chassis. Adjust A20 for -3 volts at point (F). Readjust A18, A23, A24 and A25 for response similar to Fig. 7. Adjust A26 for maximum gain at mid-point of response curve. Repeat as necessary until proper response is obtained. | | | | | | | |
| 23. | | Connect frequency meter as in Step 20. | Not used | Freq. Meter to 257MC | 13 | Not used | A22 | Turn fine tuning control fully clockwise. Adjust for audible beat on freq. meter. SLIGHTLY overshoot the adjustment an additional turn in the same direction then adjust A18 to again obtain audible beat. |
| 24. | Two 130Ω Carbon Resistors | Across antenna terminals with 130Ω in each lead. | 213MC (10MC Swp) | 211.25MC 215.75MC | 13 | Vert. Amp. to point (F). Low side to chassis. | A27, A28 | Adjust for response similar to Fig. 7. Turn off generator and check oscillator injection voltage range at point (F) using VTVM as in step 22. If A20 required readjustment turn sweep generator back on and recheck channel 13 response. If necessary, retouch A27 and A28 to obtain desired response. |
| 25. | | Connect frequency meter as in step 20. | Not used | Freq. meter to 227MC | 8 | Not used | A18 | Check for audible beat on frequency meter. If necessary, adjust A18 for proper oscillator frequency. |
| 26. | Two 130Ω Carbon Resistors | Across antenna terminals with 130Ω in each lead. | 183MC (10MC Swp) | 181.25MC 185.75MC | 8 | Vert. Amp. to point (F). Low side to chassis. | A23, A24 A25, A26 | If necessary, retouch A23 thru A26 to obtain response similar to Fig. 7. If A23 required adjustment turn off generator and switch back to channel 13 and check oscillator injection voltage as in step 24. |
| 27. | If oscillator injection trimmer (A20) was far off it may be necessary to repeat steps 25 and 26 several times before proper setting of A20 is obtained. | | | | | | | |
| 28. | | Connect frequency meter as in step 20. | Not used | Set freq. meter to 129MC | 6 | Not used | A29 | Set fine tuning control to mid-range position. Adjust A29 for audible beat on frequency meter. |
| 29. | Two 130Ω Carbon Resistors | Across antenna terminals with 130Ω in each lead. | 85MC (10MC Swp) | 83.25MC 87.75MC | " | Vert. Amp. to point (F). Low side to chassis. | A30 A31 | Adjust for response curve similar to Fig. 7. Check oscillator injection voltage as above. Readjust A20 if necessary. |
| 30. | If A20 required adjustment switch receiver and generator to channel 8. Retouch A23 for response similar to Fig. 7. Recheck A18 and A21 for proper oscillator frequency as in Step 20. | | | | | | | |
| 31. | Two 130Ω Carbon Resistors | Across antenna terminals with 130Ω in each lead. | 85MC (10MC Swp) | 83.25MC 87.75MC | 6 | Vert. Amp. to point (E). Low side to chassis. | | Check for response as in Fig. 7. Marker response should not fall below 80% on any channel. Check oscillator injection voltage at point (F). If markers fall below 80% on response curve retouch A30 and A31 for proper response. |
| | | | 79MC (10MC Swp) | 77.25MC 81.75MC | 5 | | | |
| | | | 69MC (10MC Swp) | 67.25MC 71.75MC | 4 | | | |
| | | | 63MC (10MC Swp) | 61.25MC 65.75MC | 3 | | | |
| | | | 57MC (10MC Swp) | 55.25MC 59.75MC | 2 | | | |
| 32. | " | " | 213MC (10MC Swp) | 211.25MC 215.75MC | 13 | " | | Check for response as in Fig. 7. Check oscillator injection voltage at point (F). If markers fall below 80% on any channel retouch A23, A24 and A25 for proper response. |
| | | | 207MC (10MC Swp) | 205.25MC 209.75MC | 12 | | | |
| | | | 201MC (10MC Swp) | 199.25MC 203.75MC | 11 | | | |
| | | | 195MC (10MC Swp) | 193.25MC 197.75MC | 10 | | | |
| | | | 189MC (10MC Swp) | 187.25MC 191.75MC | 9 | | | |
| | | | 183MC (10MC Swp) | 181.25MC 185.75MC | 8 | | | |
| | | | 177MC (10MC Swp) | 175.25MC 179.75MC | 7 | | | |

# ALIGNMENT INSTRUCTIONS (cont)

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 54. | Two 130Ω Carbon Resistors | Across antenna terminals with 130Ω in each lead. | 57MC (20MC Swp) | 55. 25MC 59. 75MC | 2 | Vert. amp to point (E). Low side to chassis. | A17, A18 A19, A20 (See remarks | Ground the AGC line at tuner terminal board. Turn off the adaptor switch, removing plate voltage from oscillator. Adjust for response similar to Fig. 11B. Do not exceed limits shown in Fig 11A and Fig. 11C. Each channel strip adjustment for an individual channel strip has a corresponding adjustment on all other VHF channel strips. Since these adjustments are identical in position and function they are indicated by the same "A" number in the interests of simplification. Adjustments A17, A18 and A19 are accessible through holes in top of tuner as the channel switch is turned to each channel. Adjustment A20 refers to coupling capacitor whose positioning affects band with of response curve. |
| | | | 63MC (20MC Swp) | 61. 25MC 65. 75MC | 3 | | | |
| | | | 69MC (20MC Swp) | 67. 25MC 71. 75MC | 4 | | | |
| | | | 79MC (20MC Swp) | 77. 25MC 81. 75MC | 5 | | | |
| | | | 85MC (20MC Swp) | 83. 25MC 87. 75MC | 6 | | | |
| | | | 177MC (20MC Swp) | 175. 25MC 179. 75MC | 7 | | | |
| | | | 183MC (20MC Swp) | 181. 25MC 185. 75MC | 8 | | | |
| | | | 189MC (20MC Swp) | 187. 25MC 191. 75MC | 9 | | | |
| | | | 195MC (20MC Swp) | 193. 25MC 197. 75MC | 10 | | | |
| | | | 201MC (20MC Swp) | 199. 25MC 203. 75MC | 11 | | | |
| | | | 207MC (20MC Swp) | 205. 25MC 209. 75MC | 12 | | | |
| | | | 213MC (20MC Swp) | 211. 25MC 215. 75MC | 13 | | | |
| 55. | Turn off the sweep generator and remove the scope from point (E). Turn the AGC control fully clockwise. Remove the ground placed on the AGC line in the above step. Connect the potentiometer arm of the bias supply to the tuner AGC terminal. Connect the positive lead to the tuner case. Ajust for -3.5 volts at AGC terminals. Connect the potiometer arm of a second bias supply to point (F). Connect the positive lead to chassis. Adjust for -5 volts at point (F). Turn on the 6S4 adaptor switch to apply plate voltage to the oscillator. Connection of the heterodyne frequency meter for oscillator adjustment is made as follows: Insert the end of an insulated piece of wire into either of two holes next to the oscillator tube at the right top front corner of the tuner. Use care so that wire does not touch any tuned circuits. Connect other end of wire to RF input of frequency meter. | | | | | | | |
| 56. | | Connect frequency meter as in step 55. | Not used | Frequency meter to 257MC | 13 | Not used | A21 | Set fine tuning control to its mid range position. Adjust for audible beat on freq. meter. |
| 57. | Two 130Ω carbon resistors | Across antenna terminals with 130Ω in each lead. | 213MC (10MC Swp) | 211. 25MC 215. 75MC | 13 | Vert. amp. to point (B). Low side to chassis (use 3 to 5 volts peak to peak output on scope.) | A12, A19 | Adjust A12 for maximum gain on scope. Adjust A19 for maximum gain and flat topped curve. Recheck A12 for maximum gain at center of band. |
| 58. | | Connect a frequency meter as in step 55. | Not used | Freq. meter to 251MC | 12 | Not used | A21 A19 | Adjust A21 on each channel for audible beat. Connect sweep generator and scope as in step 57. Set sweep and marker to proper frequencies(see chart) for each channel and adjust A19 if necessary, for maximum gain and proper response curve. |
| | | | | 245MC | 11 | | | |
| | | | | 239MC | 10 | | | |
| | | | | 233MC | 9 | | | |
| | | | | 227MC | 8 | | | |
| | | | | 221MC | 7 | | | |
| | | | | 129MC | 6 | | | |
| | | | | 123MC | 5 | | | |
| | | | | 113MC | 4 | | | |
| | | | | 107MC | 3 | | | |
| | | | | 101MC | 2 | | | |
| 59. | Direct | High side to point (G). Low side to chassis. | Not used | 43.5MC (400∿Mod) | Any | Vert. amp to point (B). Low side to chassis. | A22 | Adjust for minimum 400∿ indication on scope. |

KRK12B UHF ALIGNMENT

Alignment of the UHF portion of the tuner should not be attempted unless the following test equipment is available, in addition to the usual VHF test equipment. A UHF sweep generator covering the frequency range of 470MC to 890MC. A marker generator of crystal accuracy covering the same frequency range.
Leave 6S4 adaptor connected as under KRK12B VHF tuner alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 60. | 10DB Attenuator Pad | Sweep generator thru attenuator to antenna terminals. Connect UHF marker generator loosely to antenna terminals. | Set sweep to cover channel being aligned (See chart) Use 20MC Sweep width | Set to video and sound frequency of channel being aligned (See chart) | 14 thru 83 | Vert. Amp. to point (E). Low side to chassis. | A23 A18 A19 | Turn off adaptor switch, removing plate voltage from oscillator. Ground the AGC line at the tuner terminal board. Adjust for maximum gain, symmetrical response curve centered about the pass band. See Fig. 12 for acceptable variations. |
| 61. | Connect both bias supplies and adjust as in Step 55. Remove the ground from the AGC line. Turn the adaptor switch on to apply plate voltage to the oscillator. Connect the VHF signal generator to point (E) using very short leads. Set generator to 45.75MC for remainder of tuner alignment. | | | | | | | |
| 62. | 10DB Attenuator Pad | Sweep generator thru attenuator to antenna terminals. Connect UHF marker generator loosely to antenna terminals. | Set sweep to cover channel being aligned (see chart) Use 20MC sweep width | Set to video carrier frequency of channel being aligned (see chart) | 14 thru 83 | Vert. Amp. to point (B). Low side to chassis (Use 3 to 5 volts peak to peak output on scope) | A21 | Adjust A21 for channel strip being aligned until 45.75MC and video carrier marker coincide on response curve. Adjust A19 of channel strip being aligned for maximum gain with proper wave shape. Connect VTVM to point (E). Common to chassis Set oscillator injection adjustment for reading on VTVM between .1 volt and .3 volt on all channels. |

FIG.12

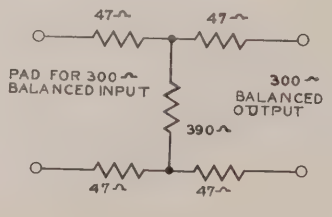



FIG.13

## TELEVISION CHANNEL FREQUENCIES

PROPERTY OF
L. F. [illegible] TOWNSHIP
39 [illegible] AVENUE ST.
DEPT. OF [illegible]

| Channel No. | Frequency Band (Mc) | Video Carrier | Sound Carrier | Channel No. | Frequency Band (Mc) | Video Carrier | Sound Carrier | Channel No. | Frequency Band (Mc) | Video Carrier | Sound Carrier | Channel No. | Frequency Band (Mc) | Video Carrier | Sound Carrier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 54-60 | 55.25 | 59.75 | 23 | 524-530 | 525.25 | 529.75 | 44 | 650-656 | 651.25 | 655.75 | 64 | 770-776 | 771.25 | 775.75 |
| 3 | 60-66 | 61.25 | 65.75 | 24 | 530-536 | 531.25 | 535.75 | 45 | 656-662 | 657.25 | 661.75 | 65 | 776-782 | 777.25 | 781.75 |
| 4 | 66-72 | 67.25 | 71.75 | 25 | 536-542 | 537.25 | 541.75 | 46 | 662-668 | 663.25 | 667.75 | 66 | 782-788 | 783.25 | 787.75 |
| 5 | 76-82 | 77.25 | 81.75 | 26 | 542-548 | 543.25 | 547.75 | 47 | 668-674 | 669.25 | 673.75 | 67 | 788-794 | 789.25 | 793.75 |
| 6 | 82-88 | 83.25 | 87.75 | 27 | 548-554 | 549.25 | 553.75 | 48 | 674-680 | 675.25 | 679.75 | 68 | 794-800 | 795.25 | 799.75 |
| 7 | 174-180 | 175.25 | 179.75 | 28 | 554-560 | 555.25 | 559.75 | 49 | 680-686 | 681.25 | 685.75 | 69 | 800-806 | 801.25 | 805.75 |
| 8 | 180-186 | 181.25 | 185.75 | 29 | 560-566 | 561.25 | 565.75 | 50 | 686-692 | 687.25 | 691.75 | 70 | 806-812 | 807.25 | 811.75 |
| 9 | 186-192 | 187.25 | 191.75 | 30 | 566-572 | 567.25 | 571.75 | 51 | 692-698 | 693.25 | 697.75 | 71 | 812-818 | 813.25 | 817.75 |
| 10 | 192-198 | 193.25 | 197.75 | 31 | 572-578 | 573.25 | 577.75 | 52 | 698-704 | 699.25 | 703.75 | 72 | 818-824 | 819.25 | 823.75 |
| 11 | 198-204 | 199.25 | 203.75 | 32 | 578-584 | 579.25 | 583.75 | 53 | 704-710 | 705.25 | 709.75 | 73 | 824-830 | 825.25 | 829.75 |
| 12 | 204-210 | 205.25 | 209.75 | 33 | 584-590 | 585.25 | 598.75 | 54 | 710-716 | 711.25 | 715.75 | 74 | 830-836 | 831.25 | 835.75 |
| 13 | 210-216 | 211.25 | 215.75 | 34 | 590-596 | 591.25 | 595.75 | 55 | 716-722 | 717.25 | 721.75 | 75 | 836-842 | 837.25 | 841.75 |
| 14 | 470-476 | 471.25 | 475.75 | 35 | 596-602 | 597.25 | 601.75 | 56 | 722-728 | 723.25 | 727.75 | 76 | 842-848 | 843.25 | 847.75 |
| 15 | 476-482 | 477.25 | 481.75 | 36 | 602-608 | 603.25 | 607.75 | 57 | 728-734 | 729.25 | 733.75 | 77 | 848-854 | 849.25 | 853.75 |
| 16 | 482-488 | 483.25 | 487.75 | 37 | 608-614 | 609.25 | 613.75 | 58 | 734-740 | 735.25 | 739.75 | 78 | 854-860 | 855.25 | 859.75 |
| 17 | 488-494 | 489.25 | 493.75 | 38 | 614-620 | 615.25 | 619.75 | 59 | 740-746 | 741.25 | 745.75 | 79 | 860-866 | 861.25 | 865.75 |
| 18 | 494-500 | 495.25 | 499.75 | 39 | 620-626 | 621.25 | 625.75 | 60 | 746-752 | 747.25 | 751.75 | 80 | 866-872 | 867.25 | 871.75 |
| 19 | 500-506 | 501.25 | 505.75 | 40 | 626-632 | 627.25 | 631.75 | 61 | 752-758 | 753.25 | 757.75 | 81 | 872-878 | 873.25 | 877.75 |
| 20 | 506-512 | 507.25 | 511.75 | 41 | 632-638 | 633.25 | 637.75 | 62 | 758-764 | 759.25 | 763.75 | 82 | 878-884 | 879.25 | 883.75 |
| 21 | 512-518 | 513.25 | 517.75 | 42 | 638-644 | 639.25 | 643.75 | 63 | 764-770 | 765.25 | 769.75 | 83 | 884-890 | 885.25 | 889.75 |
| 22 | 518-524 | 519.25 | 523.75 | 43 | 644-650 | 645.25 | 649.75 | | | | | | | | |

# HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

If the picture cannot be synchronized horizontally with the horizontal hold control, adjust the horizontal frequency slug (B1) until the picture will synchronize. If picture still will not synchronize, adjust the horizontal waveform slug (B2) several turns out of the coil and readjust B1 to synchronize the picture. If picture width or linearity is incorrect adjust the horizontal drive trimmer (B2) the width control slug (B4) and the horizontal linearity control slug (B5) for proper results.

HORIZONTAL WAVEFORM ADJUSTMENT

The horizontal waveform adjustment is madeat the factory and normally will require no readjustment. B1 and B2 are adjusted simultaneously while watching the picture. Set the horizontal hold control fully clockwise. Turn B1 until the picture falls out of sync and 3 or 4 diagonal black bars sloping down to the right appear on the screen. Turn B2 clockwise, at the same time adjusting B1 to maintain 3 or 4 bars on the screen. Continue adjusting B1 and B2 in that manner until the oscillator begins to motorboat, then adjust B2 counter clockwise until motorboating stops. To check adjustment turn B1 until picture synchronizes, then reverse the direction until picture falls out of sync with diagonal bars sloping down to the right. Continue to turn B1 in the same direction. No more than 3 or 4 bars should appear on the screen. Instead the horizontal oscillator should start to motorboat.

Retouch B2 until this condition is obtained.

To observe the horizontal waveform connect the low capacity probe of an oscilloscope to terminal "C" of L38. Turn the horizontal hold control 1/4 turn from the clockwise position so that picture is in sync.

The waveform on the scope should appear as in Fig. 14. Adjust B2 for broad and narrow peaks of equal height as in Fig. 14. If necessary while adjusting B2 keep the picture in sync with the horizontal hold control.

HORIZONTAL LOCKING RANGE ADJUSTMENT

With the horizontal hold control in full counter clockwise position momentarily interrupt the signal by switching off channel and back.

If picture remains in sync turn B1 slightly and again switch off channel, repeating until picture loses sync with diagonal bars sloping down to the left. Slowly turn the horizontal hold control clockwise and note the least number of bars obtained just before the picture pulls into sync.

If the number is more than 3 adjust the horizontal locking trimmer (B6) slightly clockwise. If the number is less than 2 adjust B6 counter clockwise. Recheck as above for the least number of bars and readjust B6, if necessary until 2 or 3 bars are present.

Turn the horizontal hold control fully clockwise and adjust B1 until the diagonal bar sloping down to the right appears on the screen, then reverse direction of adjustment of B1 until the diagonal bar just disappears, leaving the picture in synchronization.

AGC CONTROL ADJUSTMENT

Connect the vertical amplifier of an oscilloscope to pin 6 (plate) of 6CL6 (V7) video output. Low side to chassis. Turn the AGC control fully counter clockwise. Tune in a strong TV signal and adjust the scope to see the video waveform.

Turn the AGC control clockwise until the sync tips begin to be compressed, then counter clockwise just enough to remove the compression.

FM TRAP ADJUSTMENT

If interference from a strong FM station is encountered adjust A45 (on top of antenna matching transformer) for minimum intereference in the picture.

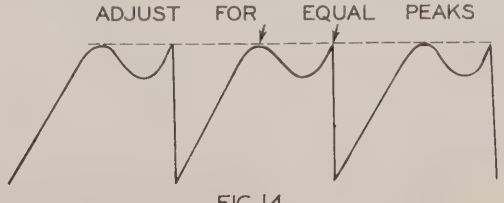
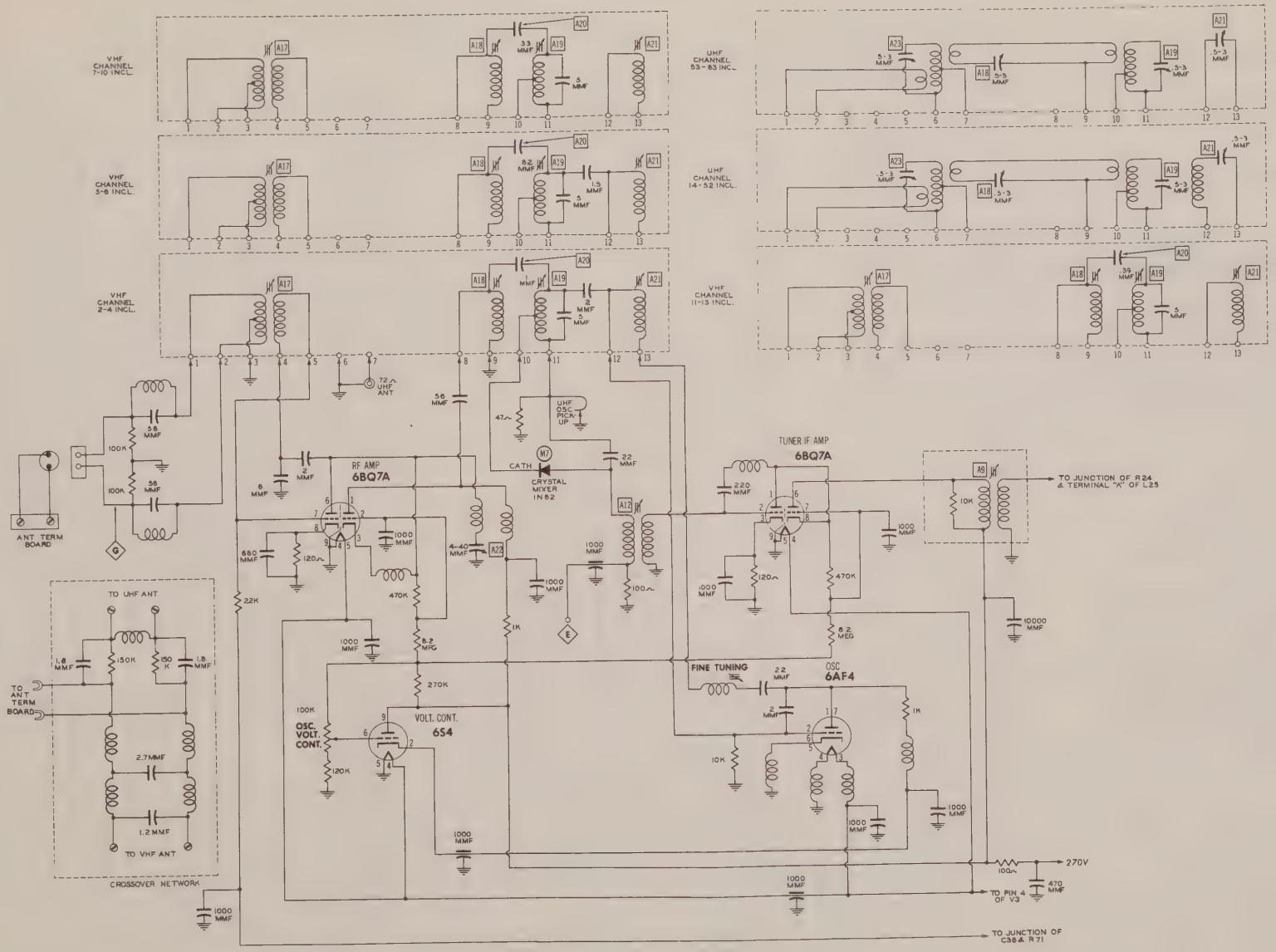



FIG. 14




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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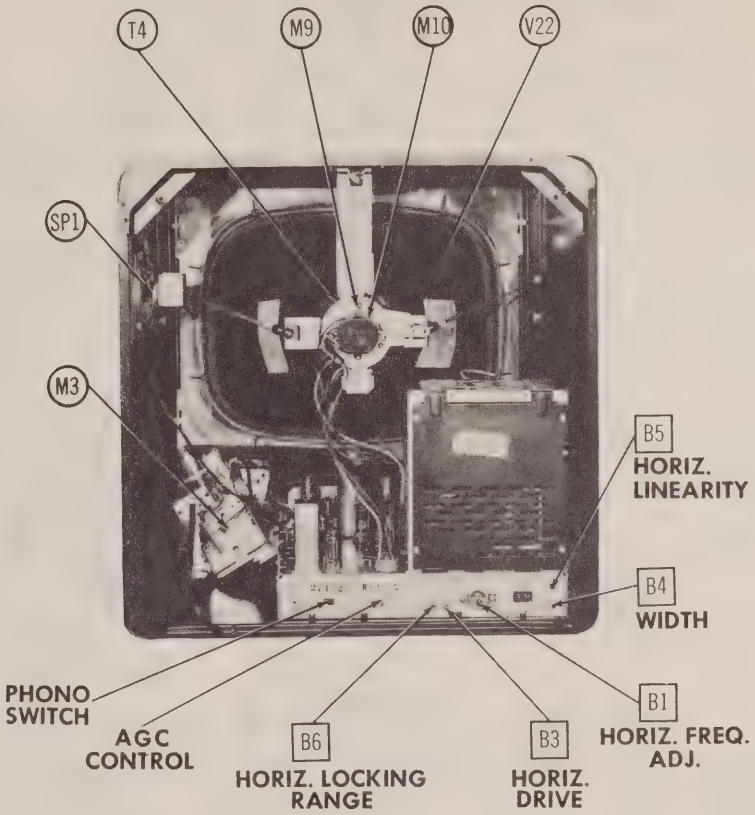
MODEL KRK 12B VHF-UHF TUNER USED ON CHASSIS KCS 78F

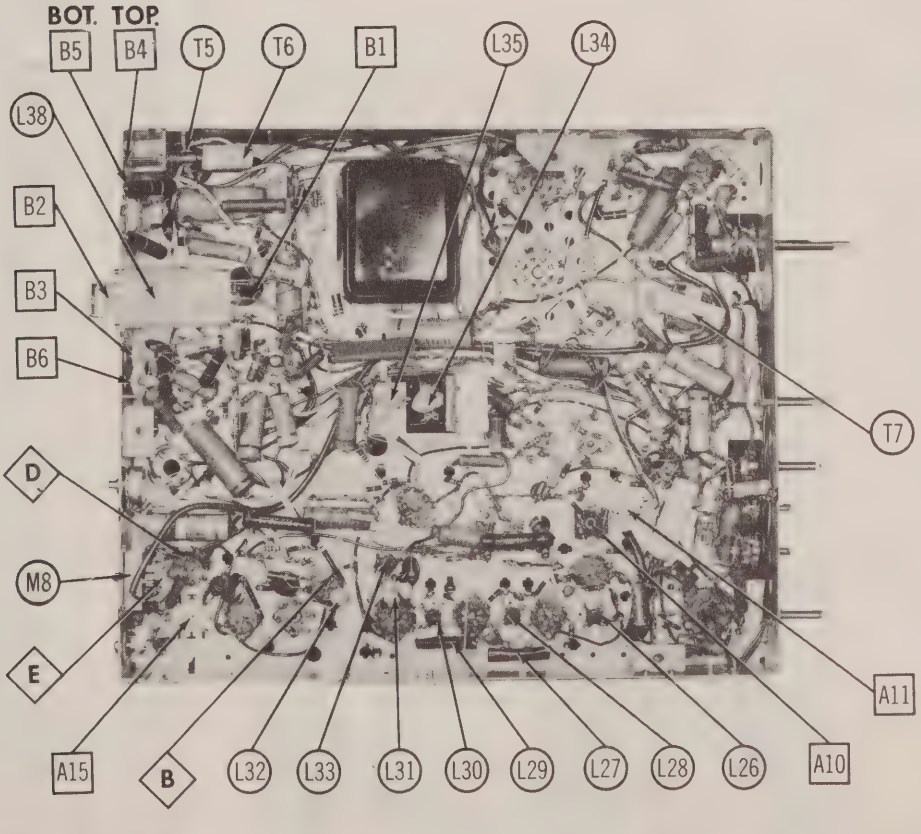
# ALTERNATE UHF-VHF TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
DENVER, COLORADO

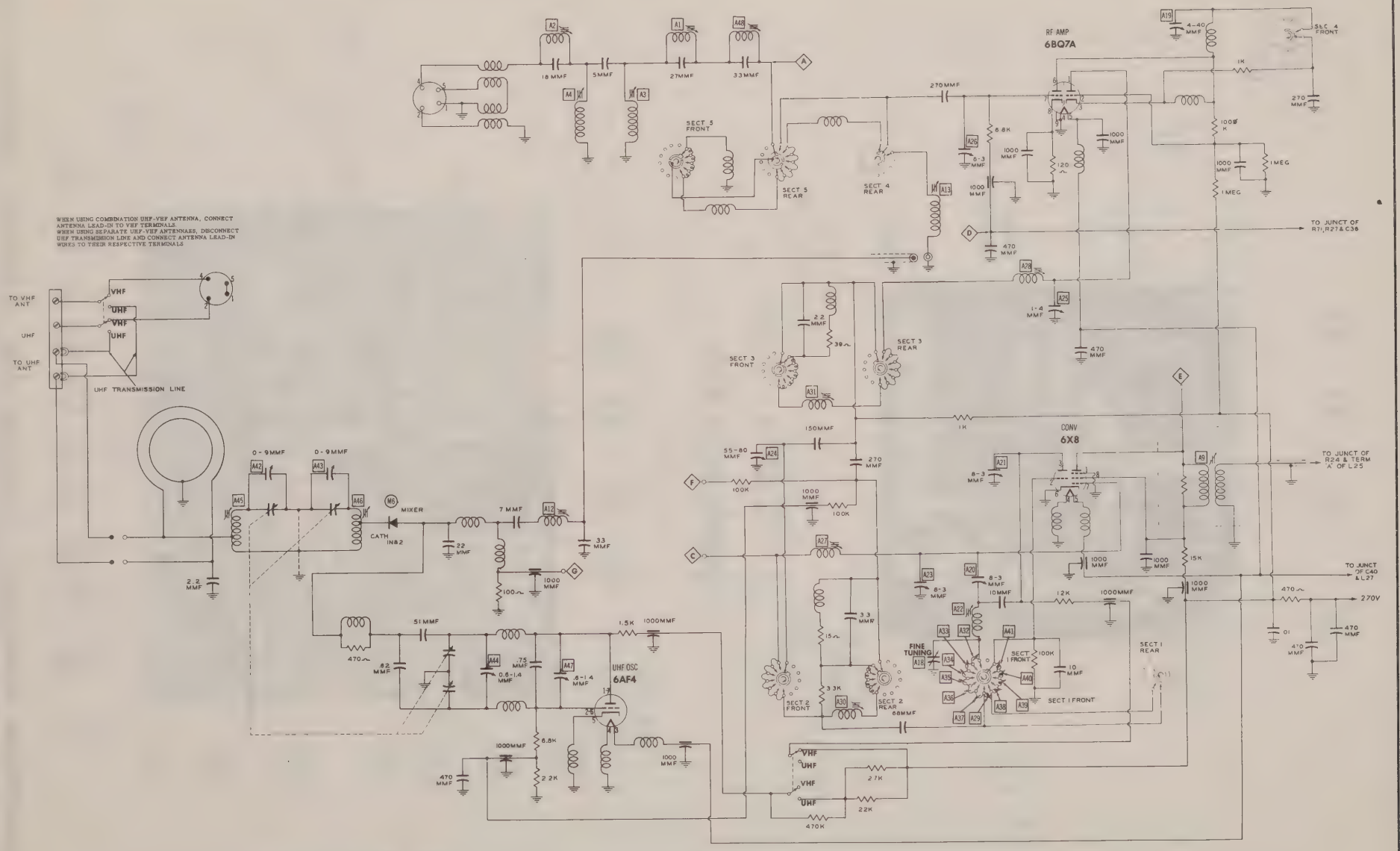





CABINET-REAR VIEW




CHASSIS-BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF-VHF TUNER KRK29A/27 USED ON CHASSIS KC378H

# ALTERNATE UHF-VHF TUNER SCHEMATIC

# PARTS LIST & DESCRIPTION

## TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

| ITEM No. | USE | REPLACEMENT DATA | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | RCA VICTOR PART No. | STANDARD REPLACEMENT | | |
| V1 | RF Amplifier | 6BQ7A | 6BQ7A | 9AJ | |
| V2 | Converter | 6X8 | 6X8 | 9AK | |
| V3 | 1st. Video IF Amp. | 6CF6 | 6CF6 | 7CM | |
| V4 | 2nd. Video IF Amp. | 6CF6 | 6CF6 | 7CM | |
| V5 | 3rd. Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V6 | Video Detector-Vert. Sync Sep. | 12AU7 | 12AU7 | 9A | |
| V7 | Video Output | 6CL6 | 6CL6 | 6CL6 | |
| V8 | AGC Keying-Horiz. Sync Sep. | 12AU7 | 12AU7 | 9A | |
| V9 | 1st. Sound IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V10 | 2nd. Sound IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V11 | Ratio Detector | 6AL5 | 6AL5 | 6BT | |
| V12 | AF Amplifier-AGC Clamper | 6AV6 | 6AV6 | 7BT | |
| V13 | Audio Output | 6K6GT | 6K6GT | 7S | |
| V14 | Sync Amp. - Vert. Mult. | 6SN7GT | 6SN7GT | 8BD | |
| V15 | Vert. Mult. - Vert. Output | 6K6GT | 6K6GT | 7S | |
| V16 | Horiz. AFC-Horiz. Oscillator | 6SN7GT | 6SN7GT | 8BD | |
| V17 | Horiz. Output | 6BQ6GT | 6BQ6GT | 6AM | |
| V18 | Damper | 6W4GT | 6W4GT | 4CG | |
| V19 | HV Rectifier | 1B3GT | 1B3GT | 3C | |
| V20 | LV Rectifier | 5U4G | 5U4G | 5T | |
| V21 | LV Rectifier | 5Y3GT | 5Y3GT | 5T | |

## CATHODE-RAY TUBE

| ITEM No. | REPLACEMENT DATA | | | RTMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | RCA Victor PART No. | SYLVANIA PART No. | GENERAL ELECTRIC PART No. | | |
| V22A | 17CP4 | 17CP4 | 17CP4 | 12D | |
| B | 17QP4 | 17QP4 | 17QP4 | 12D | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | RCA Victor PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ▲80 | 400 | 77644 | AFH2-63 | | CO36 | | FP444.8 | TVL-3786 | |
| B | ▲20 | 400 | | | | | | | | |
| C2A | ▲100 | 450 | 76970 | AFH4-103 | | C152 | | FP431.4 | TVL-3672 | |
| B | ■10 | 350 | | | | | | | | |
| C | ▲20 | 50 | | | | | | | | |
| C3A | 150 | 50 | 75218 | AFH3-112 | | CO74 | | FP387.1 | TVL-3638 | |
| B | ■10 | 350 | | | | | | | | |
| C | ▲5 | 350 | | | | | | | | |
| C4 | 18 | | 74207 | | | | | | | |
| C5 | 5 | | 93056 | SI5NP0 | TCZ-4.7 | | NP0K-050 | ZT-555 | 5TCCB-V47 | |
| C6 | 27 | | 70935 | | | | | | | |
| C7 | 33 | | 76739 | SI33NP0 | TCZ-33 | | NP0K-330 | ZT-5433 | 5TCC-Q33 | |
| C8 | 270 | | 75199 | SI270 | D6-271 | | GP2K-271 | UC-5327 | 5GA-T27 | |
| C9 | .8-3 | | | | 829-3 | | | CT565A | | |
| C10 | 1000 | | 77084 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C11 | 1000 | | 77252 | BPD-001 | DD-102 | TM5D1 | 801-001 | DC-521 | 5HK-D1 | |
| C12 | 270 | | 75199 | SI270 | D6-271 | | GP2K-271 | UC-5327 | 5GA-T27 | |
| C13 | 1000 | | 77252 | BPD-001 | DD-102 | TM5D1 | 801-001 | DC-521 | 5HK-D1 | |
| C14 | 1000 | | 77252 | BPD-001 | DD-102 | TM5D1 | 801-001 | DC-521 | 5HK-D1 | |
| C15 | 10000 | | 73960 | BPD-01 | DD-103 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | Note 1 |
| C16 | 1-4 | | | | 829-4 | | | CT551 | | |
| C17 | 2.2 | | 71502 | SI2.2NP0 | TCZ-2.2 | | NP0K-2R2 | | 5TCCB-V22 | |
| C18 | 150 | | 78276 | SI150 | D6-151 | TM5T15 | GP2K-151 | UC-5315 | 5GA-T15 | |
| C19 | 270 | | 75199 | SI270 | D6-270 | | GP2K-271 | UC-5327 | 5GA-T27 | |
| C20 | 1000 | | 77084 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C21 | 3.3 | | 71503 | SI3.3NP0 | TCZ-3.3 | | NP0K-3R3 | | 5TCCB-V33 | |
| C22 | .8-3 | | 77151 | | 829-3 | | | CT565A | | |
| C23 | .8-3 | | 77913 | | 829-3 | | | CT565A | | |
| C24 | 10 | | 78247 | SI10N750 | TCN-10 | | N750K-100 | NT-541 | 5TCU-Q1 | |
| C25 | .7 | | 71504 | | | | | | | |
| C26 | 10 | | 77865 | SI10NP0 | TCZ-10 | | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C27 | 10 | | 77865 | SI10NP0 | TCZ-10 | | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C28 | .8-3 | | 77151 | | 829-3 | | | CT565A | | |
| C29 | 1000 | | 77084 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C30 | 1000 | | 77252 | BPD-001 | DD-102 | TM5D1 | 801-001 | DC-521 | 5HK-D1 | |
| C31 | 1000 | | 77084 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C32 | 1000 | | 77084 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C33 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C34 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | Note 1 |
| C35 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | Note 1 |
| C36 | .22 | 200 | 73794 | P488-22 | | PTE4P22 | | PT4025 | 4TM-P22 | |
| C37 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | Note 1 |
| C38 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C39 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C40 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C41 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C42 | .47 | 200 | 73787 | P288-47 | | PJ2P5 | | PT405 | 2TM-P47 | |
| C43 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C44 | 1000 | | 77252 | BPD-001 | DD-102 | TM5D1 | 801-001 | DC-521 | 5HK-D1 | |
| C45A | 470 | | 77672 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| B | 470 | | | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C46 | 470 | | 77293 | BPD-00047 | D6-471 | | GP2K-471 | UC-5347 | 5GA-T47 | |
| C47 | 10000 | | 73960 | BPD-01 | DD-103 | TM5S1 | 811-01 | DC-511 | 5HK-S1 | |
| C48 | 10 | | 33098 | SI10N750 | TCN-10 | | N750K-100 | NT-541 | 5TCU-Q1 | |
| C49 | 47 | | | SI47NP0 | TCZ-47 | | NP0K-470 | ZT-5447 | 5TCC-Q47 | |
| C50 | .0047 | 600 | 73920 | P688-0047 | D6-472 | PTE6D47 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C51 | 270 | 500 | 39638 | 1469-0003 | | 5R5T3 | | MCB241 | MS-33 | |
| C52 | 39 | | 73664 | SI39N750 | TCN-39 | | N750K-390 | | 5TCU-Q39 | |
| C53 | 15 | | 39044 | SI15N750 | TCN-15 | | N750K-150 | | 5TCU-Q15 | |

# PARTS LIST & DESCRIPTION (continued)

## FUSES

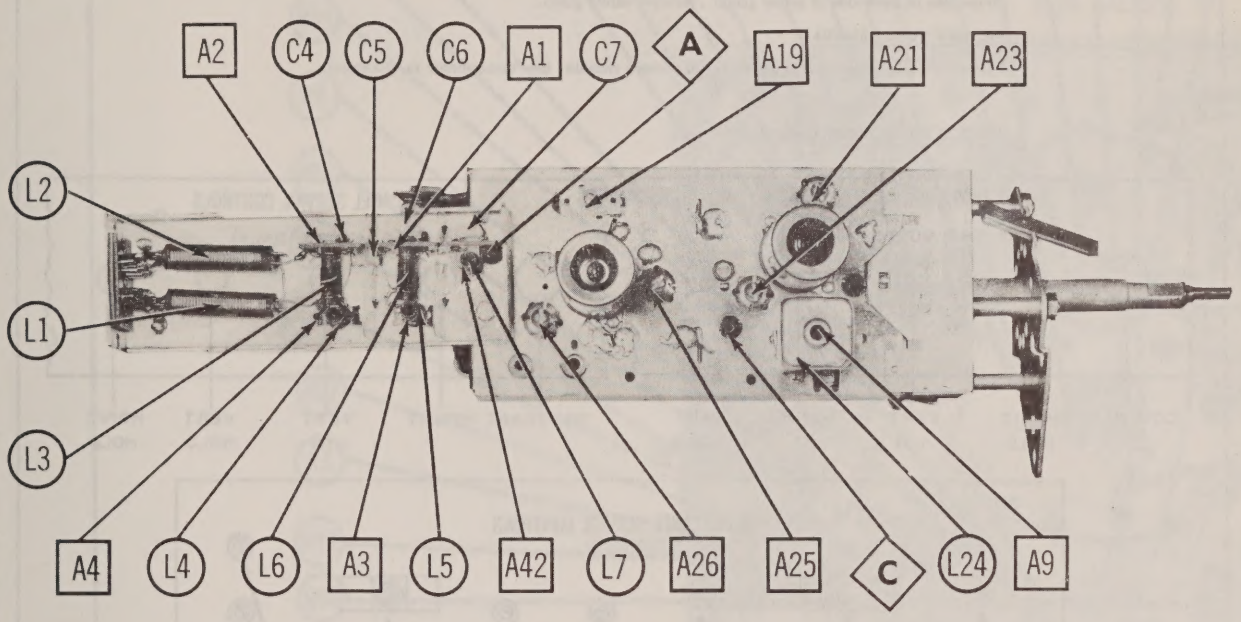
| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | RCA Victor PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG P/T | 3/10A | 77935 | | 318. 300 | | GJV 3/10 | |

## MISCELLANEOUS

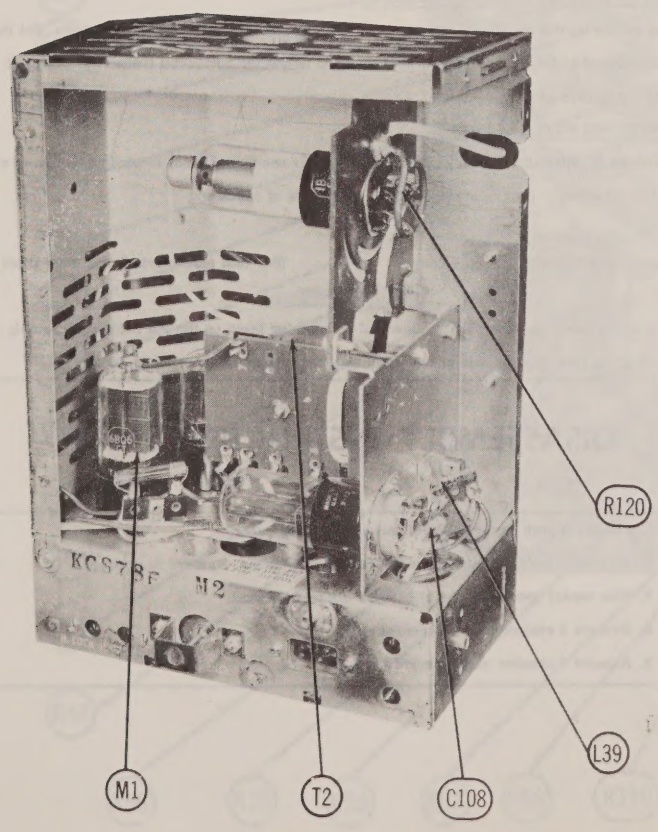
| ITEM No. | PART NAME | RCA Victor PART No. | NOTES |
|---|---|---|---|
| M2 | Dial Light | 11765 | #51 Bayonet |
| M3 | Tuner | KRK-29 | Models 17-S-350, 17-S-351, 17-S-360, 17-T-361 |
| M4 | Tuner | KRK-29A/27 | Models 17-S-350U, 17-S-351U, 17-S-360U |
| M5 | Tuner | KRK-12B | Models 17-T-352U, 17-T-361U |
| M6 | Crystal | 77489 | 1N82 UHF mixer used in KRK29A/27 tuner |
| M7 | Crystal | 77489 | 1N82 UHF mixer used in KRK12B tuner |
| M8 | Switch | 33491 | TV-phono (Slide DPST) |
| M9 | Focus Magnet | 76168 | Includes centering arm and focus adjustment |
| M10 | Ion Trap | 76317 | Model 17-S-350, 17-S-350U, 17T352U, 17T361, 17T361U |
| M11 | Ion Trap | 76141 | Model 17-S-351, 17-S-351U, 17-S-360, 17-S-360U |
| M12 | Correction Magnet | 76633 | Models 17-S-351, 17-S-351U, 17-S-360, 17-S-360U |
| A24 | Trimmer Cap. | 78397 | 80-150MMF, KRK29 tuner, 43.5MC trap |
| A11 | Trimmer Cap. | 71496 | 5-70MMF, 42.5MC response |
| B3, B6 | Trimmer Cap. | 75217 | 10-160MMF, Dual- horiz. locking and horiz. drive |
| A22 | Trimmer Cap. | 77616 | 4-40 MMF, KRK12B tuner IF trap |
| A19 | Trimmer Cap. | 77616 | 4-40MMF KRK29A/27 tuner IF trap |
| | Knob | 77718 | Brightness - beige |
| | Knob | 77709 | Brightness - brown |
| | Knob | 78360 | Channel Selector KRK29 tuner |
| | Knob | 77968 | Channel Selector KRK12B tuner - brown |
| | Knob | 77969 | Channel Selector KRK12B tuner - beige |
| | Knob | 77750 | Fine tuning KRK12B tuner |
| | Knob | 77707 | Fine tuning KRK29 tuner - brown |
| | Knob | 77717 | Fine tuning KRK29 tuner - beige |
| | Knob | 78343 | VHF fine tuning - UHF channel selector KRK29A/27-brown |
| | Knob | 78432 | VHF fine tuning - UHF channel selector KRK29A/27-Beige |
| | Knob | 77699 | Contrast - brown |
| | Knob | 77719 | Contrast - Beige |
| | Knob | 77710 | Off/On/Volume |
| | Cabinet back | 78435 | Model 17-S-350 |
| | Cabinet back | 78436 | Model 17-S-350U |
| | Cabinet back | 78439 | Model 17-T-352U |
| | Cabinet back | 78440 | Model17-T-361, 17-T-361U |
| | Cabinet back | 78535 | Model 17-S-351 |
| | Cabinet back | 78536 | Model 17-S-351U |
| | Cabinet back | 78437 | Model 17-S-360 |
| | Cabinet back | 78433 | Model 17-S-360U |
| | Control cover | 77706 | Front panel - brown - Models 17-S-350, 17-S-350U |
| | Control cover | 77954 | Front panel - dark red - Models 17-S-351, 17-S-351U, 17-S-360, 17-S-360U |
| | Control cover | 77716 | Front panel - beige -Blonde cabinet models |
| | Cover | 77759 | Channel selector - KRK12B tuner - Mahogany cabinets |
| | Cover | 77760 | Channel selector - KRK12B tuner - Oak or blonde cabinets |
| | Disc | 77756 | Polystyrene Indicator - Maroon - KRK12B - Mahogany cabinets |
| | Disc | 77757 | Polystyrene Indicator -Sand grey-KRK12B-oak or blonde cabinets |
| | Escutcheon | 78315 | Channel marker KRK29 tuner |
| | Safety glass | 78361 | Models 17-S-350, 17-S-350U, 17-T-352U, 17-T-361, 17-T-361U |
| | Safety glass | 78494 | Models 17-S-351, 17-S-351U, 17-S-360, 17-S-360U Mah. cabinet |
| | Safety glass | 78495 | Models 17-S-351, 17-S-351U, 17-S-360, 17-S-360U blonde cabinet |
| | Mask | 78317 | Channel marker escutcheon - beige |
| | Mask | 78316 | Channel marker escutcheon - brown |

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO






**RF TUNER-TOP VIEW**




**HIGH VOLTAGE COMPARTMENT**

# SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

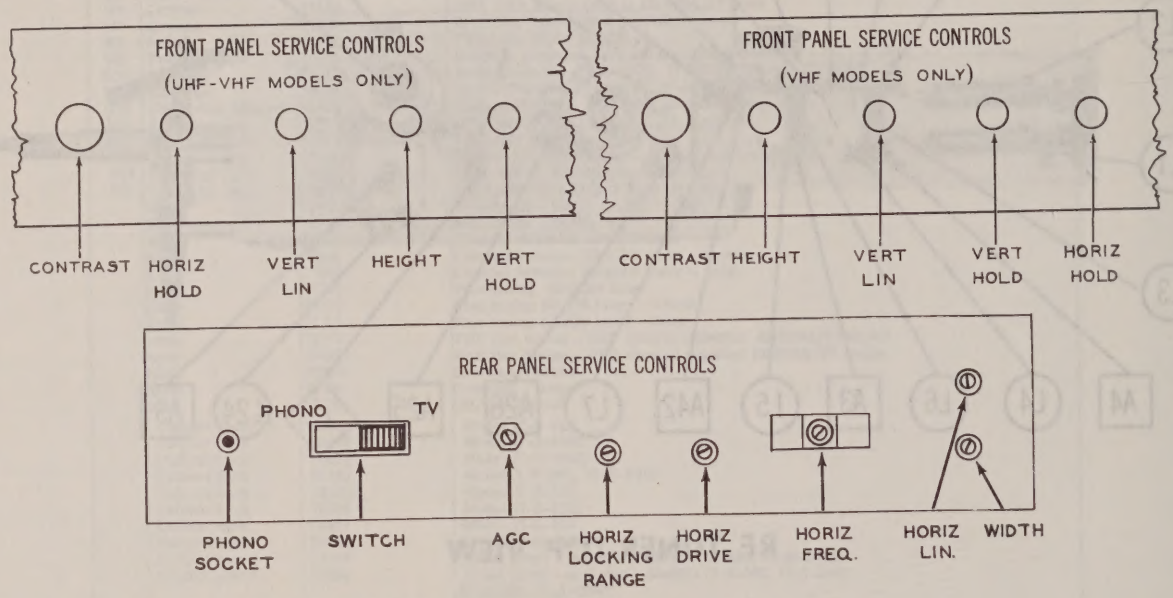
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 4 spring clips (at each corner of CRT on inside of cabinet). Remove 2 metal strips (one on each side of safety glass) . Remove safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION




HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L38) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L35) located on bottom of chassis. (See tube placement chart). Hole is provided at the under side of cabinet.

FUSES

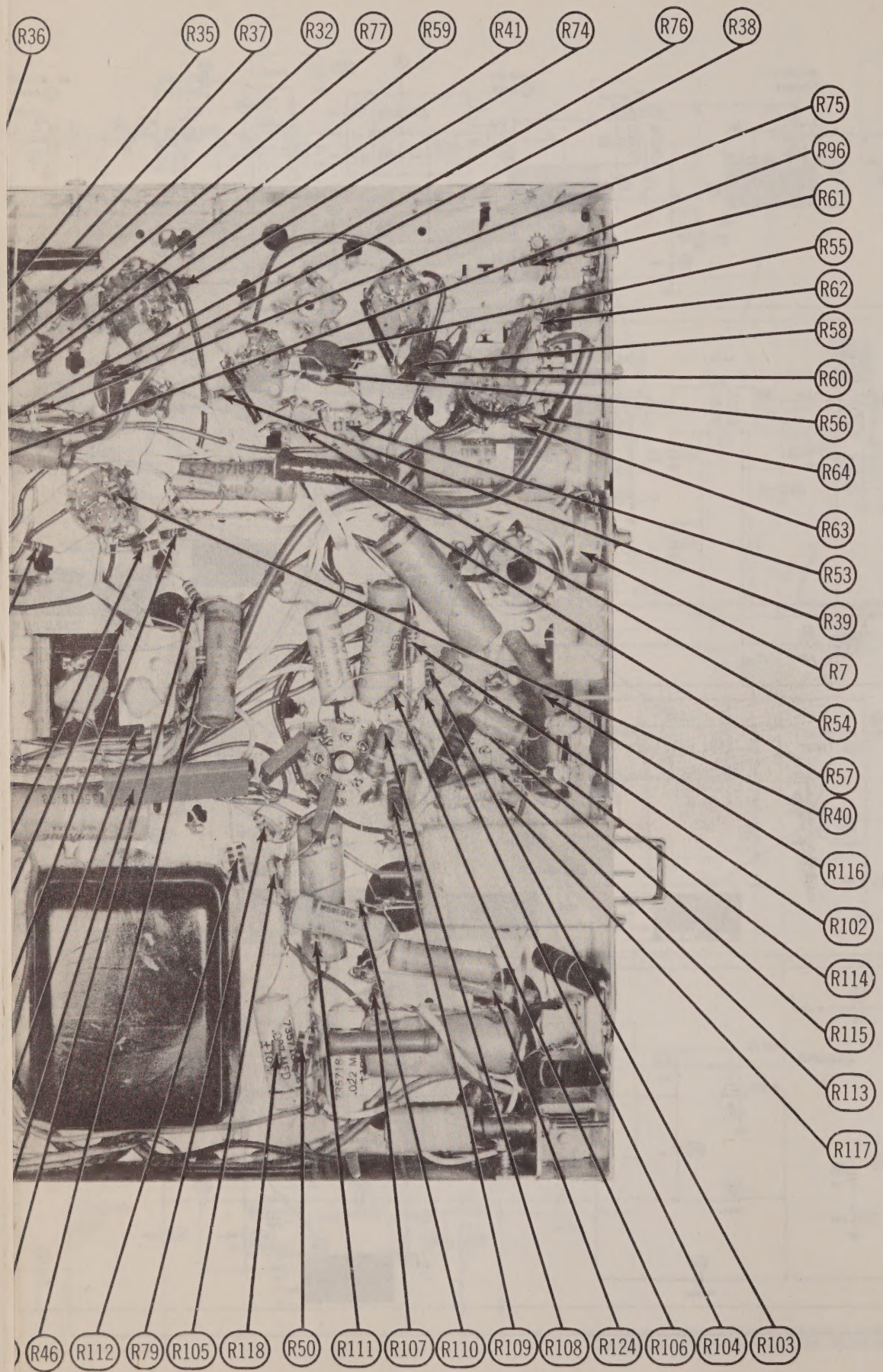
One fuse is used for horizontal sweep protection. (See tube placement chart for location).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

# DISASSEMBLY INSTRUCTIONS

1. Remove 5 push on type control knobs from front panel.
2. Remove 5 metal screws. Disconnect built-in antenna. Remove rear cover.
3. Disc onnect speaker, yoke plug, CRT socket&HV lead.
4. Remove 5 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts.Remove speaker.




**W-RESISTOR IDENTIFICATION**